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The Monthly Review

Published by the AMERICAN ELECTROPLATERS' SOCIETY

JUNE 1939

E. M. Baker.

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The Monthly Review

Published by the AMERICAN ELECTROPLATERS' SOCIETY, Inc.

A Society for the Advancement of the Science of Electroplating

JUNE 1939

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The MONTHLY REVIEW

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Editorial

By A. B. WILSON
Past President, A.E.S.

During the past few years there have been so many criticisms and suggestions regarding our research work that some of the officers of the society have felt that there was an urgent need that the members be fully informed on this subject prior to the meeting at Asbury Park.

In the past, amongst the membership at large there has been what seemed at best to be a perfunctory interest in the Research. There has been a marked lack of discussion of it at our annual business meetings. It now seems that what appeared to be lack of interest was not lack of interest but hesitancy to discuss matters on which the membership was not fully advised. In this an attempt will be made to cover the essential facts regarding our research work. This is not in any way to be construed as even an informal report from the Research Committee of which the writer is not a member. It is, however, a picture of conditions surrounding the Research.

In the matter of work already completed you are all probably familiar with the results of the research on "spotting out" which while it did not find any cure-all for "spotting out" did at least show some of its causes and how they could be avoided. The investigation of the protective value of electroplated coatings on steel have resulted in a widely accepted set of specifications and more important still has had a pronounced influence on the quality of plating in general. Exposure tests to show the protective value of plated coatings on non-ferrous metals are now well on the way toward completion.

The chairman of the Research Committee is appointed by the president of the A.E.S. who can at any time remove him. The chairman for the past several years has been accorded the privilege of selecting his own committee. The duties of the committee

have been to raise and disburse the necessary funds and to direct the research work and when necessary to contact and collaborate with other societies. The actual research work has been done by a research associate at the Bureau of Standards under the direct supervision of Dr. Wm. Blum who is in charge of all plating at the Bureau.

The financing is done by subscriptions from:—

1. Supply and equipment houses.
2. Manufacturers interested in plating.
3. Branches of the A.E.S.
4. Individual members.
5. At times the Supreme Society which one year (1932 or 1933) contributed as much as $1100.00.

One of the criticisms most often heard during the past couple of years runs about as follows, that the work should not be done at the Bureau of Standards, that the A.E.S. does not have sufficient control there, that we could exercise more control say at some university, that we could get more for the money at some university.

It is true to a certain extent regarding control. There are definite limitations at the Bureau to which we must conform. We can suggest the researches that we wish to make but they must be in line with the general policy of the Bureau, that is, they should be of a more or less scientific nature and there must be no comparison of commercial products or processes. The reasons for this are obvious. Likewise the Bureau will not compete with commercial laboratories. However, so far the Bureau has always been agreeable to any suggestions from this society.

In the matter of publishing results there might be some reason for dissatisfaction as the rules of the Bureau require the submission of results to the Bureau for approval before publication. In addition the Bureau likes to publish such results first in the Journal of Research. Progress reports are not available for publication as the Bureau objects to giving out incomplete results officially. Nevertheless there are ways of getting around this to some extent. Members of the Research Committee always have up-to-date information available. They can talk at meetings or the general results can be rewritten for the REVIEW. An attempt along this line was started a couple of years ago.

As to the control of our Research Associate there can be no justifiable objection to that.

In considering the criticisms mentioned above the advantages of having the work done at the Bureau must also be considered.

In the matter of prestige there is no university that compares even closely with the National Bureau of Standards. This is no brief for the Bureau as the writer is sure that there are a number of laboratories operated by the large companies which are at least equal to and probably superior to the Bureau in their respective fields. Nevertheless the fact remains that to the average man reports from the National Bureau of Standards are closely akin to the Gospel.

As to supervisory work the society is very fortunate that Dr. Blum, who is a hard worker and greatly interested, has been permitted by the Bureau because of the broad application of our work to devote a large share of his time to it.

At the Bureau the A.E.S. Research Fund, of course, pays the associate's salary. It pays nothing for the use of equipment, little or nothing for supplies, nothing for ordinary additional help—last year for a few months it was necessary to hire an additional man but this was for an unusual amount of extra work. All supervision is free and quite an appreciable amount of metallurgical work necessary at times has also been free.

In contrast at any university the Research Fund in addition to the associate's salary would pay well for the use of any equipment, for all supplies, for any incidental additional help, for all supervision it may get and possibly for some it doesn't get and for any other necessary services.

There is no question the Research gets more for its money at the Bureau than it could any place else. The total expenditures of the Research for 1937-38 were about $4800.00 of which but $300.00 went to the Bureau practically all of which was used to defray Dr. Blum's expenses on Research business. The government as you know is not too generous along that line, that is, if you are not on W.P.A.

Another question heard is—who benefits from the Research work? Is it the automobile manufacturers? The society as a whole? The individual plater? Who? Some members say it doesn't help the plater—that the plater can't see any advantage to him. One firm—always a good contributor to the Research—wants work on brass under special conditions. A number of the members want information to help with their daily production problems.

Well, the answer to part of that is simple—we can't please everyone. The work must be on projects of broad application.

Previous to 13 or 14 years ago or about the time of the inception of chromium plating there had been little or no improvement over quite a span of years. Improvement at that time was forced by the advent of the stainless steels. A lot of platers were fearful for their jobs and if there had been no improvement in plating many a plater now working would be out of a job.

Stainless steel is still a competitor in many places. The steelmakers are not asleep. Not only are they improving their products but they are also lowering their costs.

On top of this plating is facing a new competitor—a strong competitor—plastics. This one will be hard to beat. At present at least one automobile manufacturer is considering replacing all inside hardware with parts of plastic. They report the appearance is satisfactory and that the cost is lower.

The answer to the question—who benefits.—is that anything which helps the plating industry as a whole is bound to help the plater as an individual.

Another criticism has been of the Research Committee itself. It has been said that it has not functioned as a committee but has been run by one or two members. The reason for this is not hard to find. The members are scattered and too few are in a position to work. They are interested but work and time—well, that's another matter. Consequently the job of collecting funds has fallen on relatively few and the actual supervision almost entirely on Dr. Blum. However, in all fairness it must be said that during the past couple of years all Research Committee meetings and inspections have been well attended. The committee has attended to business well.

The criticism has been made that in its work with other societies the A.E.S. has not received sufficient credit for its share of the work. The fact of the matter is that some of the arguments that have been put forth have been so petty as to not warrant repeating here. Another fact that should be obvious is that if a subscriber contributes to the A.E.S. Research Fund and then gets the results he wants—in his mind we will get the credit. It does not seem that the A.E.S. prestige has been hurt in any way by association with other societies. The truth is that A.E.S. prestige is at a higher point today than ever before in the the history of the society.

How is the Research financed? In 1938-39 total collections were $3840.00 of which five branches contributed $160.00. More was collected in one section than in all the rest of the country put together. More than 75% of the total came in as the results of the efforts of two men.

Why do subscribers contribute? Is it a matter of policy and to help out in general or is it in expectation of direct benefits. This writer doesn't know. His opinion is that the supply and equipment houses contribute to help plating in general but that the general manufacturers contribute in the hope that they may get something back for their money. Whatever their reasons the above two classes support the Research. The A.E.S. members as individuals contribute little.

This completes the major criticisms of the Research. Now for the suggestions.

One made several times by the A.S.T.M. is that the two societies collaborate in setting up specifications for plating materials. Last year this suggestion was made to the writer who did not send it on to the committee as it seemed that as a whole the purity of chemicals required for plating is satisfactory, that most firms and platers have definite ideas as to their requirements and that most materials from reputable suppliers are of satisfactory quality. At the time the need did not seem to warrant the cost. However, should it be felt that there is a need for such specifications these could be worked out quite readily by the committee.

Another suggestion advanced by several prominent members of the society is that the society establish and operate its own laboratory to be used for such research work as seems warranted and also for the purpose of helping members solve their problems.

The first thing to be given thought in considering such a suggestion is cost. The first cost of such an undertaking, that is, the cost of equipping and installing a suitable laboratory would be not less than twenty-five thousand dollars and might easily be double that. The cost of operating would be somewhere in the neighborhood of twenty-five thousand dollars per year. The writer feels that these figures are not far wrong although some of our members think that fifteen thousand dollars per year would be sufficient. However, grant that they are right. Then compare that undertaking with our present work and cost and the difficulty encountered at times in financing even our present program and the proposal seems ill advised in the extreme. It would certainly require different methods of financing than those we are now using.

It has been suggested that members asking that work be done in their behalf would be glad to pay for it. That is undoubtedly true but it is probably also equally true that many of our members do not realize just how costly some of this could be.

It has been suggested that the Research Committee investigate and approve supplies, processes, etc. On the face of it this might seem like a good idea. Give it sober thought.

It would mean either a separate laboratory as just mentioned or at least taking the work out of the Bureau and placing it elsewhere. It would mean strong resentment from anyone whose product was not approved and certain loss to the society of any support from that source or it would mean eventual approval of every product made by our supporters and, of course, in the latter case approval would mean nothing.

The writer has recently had occasion to investigate processes offered by seven firms only one of which finally appeared to be satisfactory. Assume that these were all processes of seven good supporters of the A.E.S., that these investigations were conducted by the Research Committee and reported as above. Can you imagine the rumpus that would be raised by the six not approved? Was there not some such occurence in connection with one of our former researches even though no identification of materials was made?

This proposal also seems ill advised.

Nevertheless it could be done but it would involve much work and considerable cost. Among other things the net result would be that a good many of our own members would be sore. It is well known that a method which is satisfactory in one place under one set of conditions is unsatisfactory in another place under different conditions. This being so at least a part of our membership would soon feel that the Research Committee "knew not whereof it spoke." That is expressing it mildly.

One suggestion of apparent merit is that a study be made of plating solutions or rather of the effect upon solutions of their various constituents.

As published before in the REVIEW the present Research program involves the investigation of the following subjects:-

1. Do mechanical forming operations affect the continuity and protective value of coatings subsequently plated on brass and steel?
2. Do methods of polishing, cleaning and pickling various metals influence the protective value of the coating?
3. What effects do the shape of articles and their positions in the plating tanks have upon the distribution and protective value of the coatings?

These are all subjects on which information is needed but as outlined it is a pretentious program, one which can only be completed after a long time. To the writer it seems that it is compli-

cated to such an extent that even when completed there may be so much data as to defy ready interpretation.

For these reasons the present program was objected to by a part of the Research Committee at Milwaukee but when it was submitted to the convention as a whole it was approved without discussion.

Considerable work has already been done on it during the past few months although being mostly of an exploratory nature the results may not seem to show it. It is certain that the Bureau is not entirely satisfied as to the merits of the present program. However, we may expect to know by convention time just what can be expected if this program is to be continued.

In considering the future of the Research it seems that the following are the alternatives that should be taken into account:-

1. If the present program is to be continued it must be realized that it will have to be on a long time basis—that no quick results are to be expected.
2. Change to experimental work to help platers and investigate products and processes which will necessitate a radical departure from our present procedure.
3. Discontinue all research work and put the same energy into educational work.
4. Discontinue the present program and do no research work until a satisfactory program can be worked out. Appoint a small committee and give it until 1940 to work out a suitable program for submission to the 1940 convention.

To the writer it seems that the last is the best solution. It does not seem the part of wisdom to continue a program the value of which is questioned by some members of the Research Committee and by the majority of your Executive Board.

The particular object of this article is to have the delegates go to Asbury prepared to check into the Research rather than as has been usual in the past to rubber stamp the suggestions of the committee with little or no discussion.

The 27th Annual Convention

Everything is in readiness for the 27th Annual Convention of the American Electroplaters' Society at Asbury Park.

Very soon from far and near, representatives from all the branches will gather for the Annual Event. This is a time for Educational uplift, relaxation from the every day routine and an opportunity to grasp the hand of those we meet but once a year

Then again we meet to perpetuate the Society's policies and approve or reject new ideas and suggestions. Last year we made many new changes in the Constitution and By-Laws. This year we are glad to say that only one resolution presents itself. There is however a problem before us, that has caused considerable anxiety for several years and requires the earnest consideration of all our members. It is the problem of our Research. We have not the space or the inclination to enter into the various phases of this important subject. Suffice it to say that every member of the A.E.S. should show more interest because only by so doing can the Research Committee be guided in its actions. Let us give Research primary consideration this year and not take it for granted that the Committee can get along without our aid.

Once again may we very pleasantly remind our members that the past year has kept the ranks of our Past Presidents intact.

Every A.E.S. president since the Society was organized is still living. We hope there may be a grand reunion of these men, some of them well advanced in years, during the Convention.

May we pay tribute to the officers of the year just closed.

President Phillips because of his manifold duties has not had the opportunity to enter into A.E.S. activities as he intended to, for the last few months he has been in Europe on Company business.

1st Vice President R. M. Goodsell has done a fine job as Chairman of the Membership Committee. It is gratifying to know that for the first time in our history we have gone over the 2000 mark in our membership.

2nd Vice President Fred Fulforth has been a big help as Chairman of the Educational Committee. He has also helped considerably in the Abstract Section of the REVIEW, and in securing papers for publication.

3rd Vice President, Joseph Downes shares honors with Paul Oldam of Newark Branch in securing Branch exhibits. These two men working together have in prospect, exhibits from every branch of the organization. This is no easy task as it requires patience and persistence, most of our members being careful not to answer letters addressed to them the first or second time.

To Horace H. Smith, Chairman of the Convention Committee and his loyal workers of both sexes we believe the verdict of the delegates and others attending the Convention will be "well done." We predict a wonderful Convention and feel sure that the many hours of preparation by the Convention Committee will be amply repaid by loving remembrances and expressions of good will.

Educational Activities *in the* American Electroplaters' Society

By FREDERICK FULFORTH

Read at the Newark-New York Joint Meeting, February 18, 1939

THE subject may best be approached by asking, "What is the American Electroplaters' Society?"

Our constitutional preamble tells us it is "an educational society for the advancement of the science of electroplating".

Without benefit of source research, it is doubtful whether this were the original conception of its membership at all; in fact, if run true to the form of earlier guild groups, it was a spontaneous or gradual growth of curiosity in one plater's mind, as to how another could produce such apparently excellent work at attractive prices beyond his competitor's comprehension; coupled with a determination to find out, by one means or another.

Naturally, this led to a state of seemingly friendly interchange of innocuous ideas between two individuals for mutual benefit, until a pooling of entire knowledge was deemed advisable to stifle competition. It is also pleasing to believe the original grouping was brought about by friendship and esteem of such individuals for each other; as well it might have been; or perhaps by their mutually altruistic ideas of increased service to mankind.

However it may have been, this partnership of methodology once being consummated, instead of killing competition really increased it, since all other workers in the field were obliged either to come into the combine, make one for their own protection, or perhaps the original groups were forced to disclose their knowledge in order to sub-let sufficient work to maintain production demands, now made upon their inadequate equipment, due to superior workmanship, in the event of their unwillingness to freely give thereof.

Moreover, at this early stage the word science had no application; ART, spelled with capital letters, was the term; and wherever applied art exists, the striving of the individual for preferential treatment is synonymous.

Some of us still treat electrodeposition as a secret art, or at least the work of an artisan; as indeed for example, some forms of the coloring of metals may still be; but back of all these lie scientific reasons and chemical formulae which, when once discovered, put the artisan's arduous labors to shame by their simplicity for easy reproducibility.

How ripe, this era for a man with vision!—to lead these pseudo artisans from their miasma of Art into the clear bracing air of Science.

Charles H. Proctor had the vision, the knowledge, the perception of the right course to follow as well as the confidence of most groups in the business, and the courage to begin an arduous work in February 1909 for the founding of the society, basically with the ideals it represents today.

In his letter, in reply to mine, asking for early history, received just a few days ago, he astounds me by enclosing copies of his addresses made in New York and Detroit many years ago, advocating things which have since become permanent A.E.S. policies; as well as by advancing ideas believed originally conceived only in my own mind, until consulting his printed evidence of earlier conception.

It is very evident that we have grown since our founder's advent along lines prescribed by him until today we stand at the threshold of our own preamble, "for the advancement of the science of electro-plating".

How well are we guarding our inheritance. In many ways very well, as evidenced by our growth, free interchange of knowledge (both in open meeting and by personal contact), availability of plant inspection for fellow members and pleasant relationships with the suppliers of equipment and production essentials to our trade.

In other ways some would say, "not so well", as, for example, in our research policies which have never been sufficiently aggressive to capture the largest developments in recent years for the benefit of the membership as against the patentees' exploitation of our employers.

Suppose, for instance, that we as a society could have either hired research associates who might have developed chromium, cadmium, bright nickel, zinc, high speed copper or other forms of deposition, or have been in a position to bid for assignment of

such patents to us, then we could have been, with even one or two of these things, in a position to have users thereof flocking into our fold and taking their chemists and platers from our membership to the point where such positions would have been our natural monopoly and what funds we required, other than those secured by a small royalty and placement service fee, would have been easily solicited from those who were known to have benefitted and could reasonably be supposed to have been still further remunerated by the results of our proposed researches.

The position today is unfortunately not that way, since our employers are obliged to support through royalty payments the equivalent of a separate research organization for nearly every bath used in our plants.

Immediate steps should be taken to overcome this handicap, as the future may be expected to hold even more glorious discoveries than those of the past, for which we should be in a strategical position, to benefit our membership, our employers and the public, rather than to permit their exploitation thru the discovery of more natural laws.

Having written all the branches and various prominent individuals for their veiws on educational activities and having been further assisted by our esteemed Executive Secretary, a brief tabulation of the resulting methods and some comments upon them would now seem in order before proceeding further.

Twenty-six of the twenty-nine branches replied, so that the data here presented is based upon their answers and shows the following methods in use:—

BRANCH	SUPREME
1. Speakers—100%.	1. MONTHLY REVIEW
2. Question Box—93%.	2. Abstracts.
3. Instructed classes—58%.	3. Research Progress Reports.
4. Annual meetings—43%.	4. Convention papers.
5. Local publications—8%.	5. Exhibits.
6. Demonstrations—4%.	6. Symposia.
7. Plant visits—4%.	7. Branch papers.
8. Motion pictures—4%.	8. Convention proceedings.
9. Supply houses.	

In the earlier days, the Question Box played a large part in the meetings of the branches, since each member was anxious to discover from his fellows the deficiencies of knowledge in his

own mind as well as to impart that portion in his, unknown to them.

When general information became more commonly known, interest fell off until tricks were frequently used to bolster waning interest such as one disclosed by our old friend George Gehling, who smilingly admits to standing in the hall of the meeting place plassing out slips with typewritten questions to be asked when interest showed signs of flagging. The questions were all good ones, provocative of thought and requiring thorough knowledge to answer, but became only a crutch to lean upon and had to be soft-pedaled in favor of gleaning previously unknown knowledge from those in positions to know the new subjects whereof they spoke.

Logically, these individuals were localites who had perfected or learned new processes and such men still lend a strong helping hand in the leadership in our branches, but could not keep up with the tumultuous outpouring of improvements throughout the country so that branches more and more called outside personalities to appear before them and expound their ideas and explain the new methods.

The speaker phase now became firmly intrenched in our educational activities and still remains the more favored method for meetings.

This year the manufacturers and suppliers to the trade were openly recognized as having something to sell and were invited to frankly appear upon invitation before our various branches and tell their stories for their own benefit and to the advantage of those attending, should the products so advertised be usable by them. The same policy has been in effect for years but the naming of names and quoting of prices was considered de trop, whereas now all the information required is freely given.

Sales forces have been given every opportunity by the educational chairman to get their stories before our branches with the thought of selling a personal appearance to further disclose details of their product to the mutual advantage of our membership and themselves. It is notable that about half this year's speakers to date have been of this type, while the other half have been the disinterested individuals who were by reason of their knowledge and experience able to compare and weigh the values of the first speakers' natural enthusiasms, for our benefit, here referring

to the college professors, independent consultants and research workers, as well as practical platers.

There is no danger of the A.E.S. becoming a fertile field to foster the growth of any high pressure sales groups, any more than there is reason to adopt an "holier than thou" attitude toward anything but the giving of ear to pure science. Rather will we carefully weigh the solicited sales presentation in the experience of our scientific members' mental balances, using our own reactions as weights to bear either way, with the little rider to strike the final delicate adjustment represented by common sense consultation in our own sanctums.

It being impossible for any one speaker to cover the whole field in a given period, some form of dissemination for their information became essential and the answer was logically our publication, the "MONTHLY REVIEW", whereby the entire membership could glean the general picture of the industry from month to month and guide its actions accordingly.

The abstract section covers practically the whole field of electrodeposition with this year's additions from chemical abstracts and allied subjects, serving as an index for almost all available knowledge upon our subject.

The "REVIEW" editor, has been elevating this publication to an ever higher standard, so that today the trade publications are eager to reprint new information from its pages regularly.

He could do an even better work with greater co-operation from the branch librarians were they to promptly dispatch pertinent condensations of the proceedings in their individual branches to him, and it is to be hoped all these men will improve in this respect to the high standards now evidenced by a small percentage.

Somewhere in the previously mentioned growth a more scientific attitude became noticeable, to such an extent that many of the practical platers could not readily understand the language of the speakers appearing before them.

A logical result was the fostering of group instruction in electro-chemistry, either directly by branch financial support or by sponsoring existing facilities and supplying energetic action to assist formation of such classes under auspices such as evening high schools, colleges and correspondence courses.

Both New York and Newark branches are known to have commenced this work as early as 1910 or 1911.

In Newark, Mr. George Hogaboom was teaching chemistry in the fall of 1910-11 at the Newark Technical School and still has some of the examination papers, while one of his pupils, Mr. Oliver Sizelove in 1915 instructed for several years a class which is in almost continuous operation to the present day under equally able men.

In New York, a branch laboratory was maintained at about the same date to which every member had a key and could enter at will to conduct experiments or make analyses; while the first class was instructed by Mr. Wiliam Voss, later succeeded by Mr. W. E. Dabolt until the fall of 1915, when Mr. Joseph Haas began his teaching of electro-chemistry as applied to the plater's every day operations, rather than the theory of chemistry. This is evidenced by letters of appreciation published in *Metal Industry* by his pupils, publicly acknowledging the practical benefit of his instruction to their employers and themselves.

Many other groups continue successfully for the training of newer members joining the A.E.S. branches or hoping to do so, and too much praise cannot be given such men as Mr. Albert Hirsch of Philadelphia, the first Supreme educational chairman who did much to foster the class idea on a national scale and continues to instruct one in person, from whose ranks many Philadelphia platers and laboratory assistants have been drawn; as no doubt have also those in the classes of Drs. Pan and Young in New York City, as well as others not personally known.

The supply houses were not slow to see the benefits to be derived by the impartation of such knowledge and shortly opened their laboratories for limited instruction; in addition supplying a form of correspondence course in analytical work or appointing a traveling representative for free consultative work along these lines.

With more detailed information, the subject of electroplating classes could be made a fascinating discourse for a future address, such items as the curricula, total number instructed, methods of

support (it is believed in at least one instance the W.P.A. was helpful financially) and proposed future continuance methods, as one request received—for a complete analytical course and electro-chemical lecture series in the "REVIEW", followed by rotating visits of the instructor to each branch.

Other branches doubt the interest to be aroused by any such work but the whole subject could be reopened by a timely paper and aggressive followup by the Supreme Society were sufficient comment forthcoming.

In many instances, the local members have assisted in the exposition of a new process by opening their plants for practical demonstrations to their fellow members or in the case of a convention city acting as host to all comers.

The mysticism surrounding electroplating has thereby been dispelled to some extent and more and more competitors are sitting down together to work out the best methods for all of their plants which is a step in the right direction toward greater service to humanity and can be very largely attributed to the increasingly open-minded attitude of the plater in the A.E.S.

Moreover, the plater now consults the electro-chemist and metallurgist instead of holding him at mental arm's length; whereby the combination of practical and theoretical knowledge has helped each instead of eliminating one; while about the one to be eliminated without such consultation, there can be little question.

Another mental stimulus is provided by holding of annual meetings such as this one, for which enough enthusiasm can be aroused to secure a large attendance with its complimentary increased budget to allow procurement of exceptional speakers otherwise difficult to procure for small audiences.

The resultant social stimulation has a salubrious effect also as evidenced by an increase in regional meetings this year and it is hoped more of them will be generated by the awaited success of the two now in preparation.

While on this subject, it were timely to call attention to the necessity for local distribution of proceedings for those unable to attend meetings. So far as is known, the Philadelphia "Quaker City Reminder" is the only publication issued every month to

its branch members containing at least abstracts, sometimes complete printing of the previous month's speaker's talk, but always news of interest tending to build better attendance and achieve unity of thought on policy.

It has now, by unsolicited request, reached a sizeable non-member and foreign circulation acting as an ambassador and membership procurer to the point of being yearly self-supporting without benefit of advertising of any kind other than past and future activities of the branch.

Therefore as a function of educational activity such a method cannot be overlooked.

Finally, for local benefit the newer policies must be adopted and it has been found that motion pictures either purely advertising or informative only, help to present ideas clearly and concisely and invariably draw larger attendances.

Several firms are now featuring these as: General Motors; Johns-Manville; Weston Instrument; E. I. Dupont de Nemours Co.; just to mention a few representative ones of known interest.

So far most of the things discussed have been mainly applicable to local branch activity. Now let us see in what way the Supreme Society assists the branches to increase their usefulness to their members and reach toward the goal set in the preamble.

Question Box: Not only does the "REVIEW" publish all questions and answers sent in, but now has arranged for free analytical service as a furtherance of its policy.

Speakers: At the beginning of the fiscal year, all branches were requested to transmit the names of firms or individuals who might supply interesting speakers for the ensuing season.

All returns were addressed by a questionnaire and when replying favorably full details were given to all twenty-nine branches of available speakers, their proposed topics, expense settlement and other pertinent information.

"MONTHLY REVIEW": As mentioned before, is more up to date

than ever with its abstract section, new papers instead of last year's convention proceedings and the other innovations previously acknowledged.

Instructed Classes: Through the pages of the "REVIEW", editorially and pictorially, this phase of our educational program is stressed while any of the Supreme officers are glad to lend influence for formation of such classes, to which end the travel expense account of our Executive Secretary is open for personal assistance within his power.

Supply Houses: Our relations with these are unique, as evidenced by the Good Fellowship Club meetings at our annual conventions, the monthly page devoted to its business in the "REVIEW" and the amount of free advertising therein given as personals, news, etc., as well as our desire to absorb in our membership all those interested in any phase of plating as stated in the new constitution.

Plant Visits--Demonstrations of Processes, Etc.:—are purely local except at Convention times, but the Supreme Executive Board is always pleased to use what influence it may have to foster any legitimate enterprise of this nature.

Annual Meetings: By the attendance of the Executive Board membership whenever possible and the strategic calling of committee meetings at these affairs the interest of the Supreme Society may be demonstrated as well as by the space devoted in the "REVIEW" to them.

Local Publications: The fostering of these is earnestly desired as evidenced by "REVIEW" publication of the "Quaker City Reminder" monthly and since the more published material available, the better it were possible to enlarge the scope of the whole Society.

In addition to these things, there is now a third vice-president, one of whose duties is to devote his best interests to securing platers, manufacturers and branch exhibits at Supreme conventions, with the avowed intention of thereby improving the standards of the whole group by visual comparison.

Moreover, the close association with other societies, the Bureau of Standards colleges, and commercially operated re-

search laboratories is well known, while the annual convention will more and more become the responsibility of the Supreme Society and indeed would hardly be possible without its sponsorship bringing together, as it does, all the best in international electrodeposition thought.

Also the Supreme Society's backing of research work and maintenance of their own associate at the Bureau of Standards is well known, whether all agree with the advisability of past and present programs or not, and after all, the program is in the hands of the delegates to select so must be representative of the wishes of a majority of the members whether prosecuted as vigorously as may be wished or not.

Some ten or twelve years ago, Mr. Charles H. Proctor addressed the Detroit branch upon the possibility of forming what he called "An Institute of Electroplating", elaborating on his theme by explaining the need for standardization and education of our members.

A somewhat similar idea has for several years been proposed by me so that you are now all familiar with my thought to set up as an integral part of the A.E.S. an organization which would catalog and assimilate all present available plating information, establish standards and standard practice and place on an approved list those products and processes coming within such limitations.

It is believed such an organization could become self-supporting by contributions or fees charged to manufacturers for use of its services.

Suppose, for illustration, a firm contemplated expansion or entering upon production of a new line.

Instead of spending their own money for research to discover the best type of equipment and process, their membership fee in our organization would entitle them to a survey and recommendation of all things applicable to their problem.

We would not be judging one proprietary solution or machine

against another but rather setting standards for all to attain and only recommending those having achieved them.

Again, by the distribution of favorable reports to members this organization would go far toward debunking much of the present-day "ballyhoo" about almost everything the plater uses.

Eventually, it might be possible to develop into a type of co-operative sales organization for the benefit of our members and their employer subscribers to such a program.

From the educational and research side much more could be accomplished than under the present joint committee arrangement with its limited possibilities.

All that is required to burst into full operation is agreement on a program and selection of an individual to devote his whole time to its development; since the idea has been successful before and the same methods for financing could be used as were employed by such a group as the Electrical Testing Laboratories, to name but one example.

It is an earnest wish that this thought may be left uppermost in your minds today and if considered feasible the details be discussed, to the end that definite progress along some such line may be engendered for the annual convention in Asbury Park this June.

Like the present international situation, the A.E.S. has its facists and its democracies and all other similar forms of ideology, so that it is our duty to lead ourselves out of any dangers surrounding the organization with some new phase behind which all can get together, irrespective of individual belief and work harmoniously for the benefit of the greatest number rather than the upbuilding of any one class or group.

By some such method, we must integrate the unity of our practical platers, technical advisers, electro-chemists, users of electroplating, suppliers to the trade and ultimate consumers of our goods, before any one of these, unknowingly sabotage either in whole or in part, the strength of the present organization our founder foresaw thirty years ago in this city.

"EDUCATIONAL PROGRAM FOR 1939 CONVENTION"

Arranged by Educational Committee, George B. Hogaboom, Chairman

Sessions start promptly on time

FIRST SESSION — MONDAY AFTERNOON, JUNE 19TH — 1:30 P. M.

CHARLES H. PROCTOR, Presiding
Founder, American Electroplaters' Society

1. "Notes on Adhesion of Electroplated Coatings". *A. W. Hothersall*, M.Sc. Director Electroplating Research, Woolwich Arsenal, London, Eng. President, Electrodepositors Technical Society.
2. "Distribution of Deposits on Cup-Shaped Articles". *C. E. Gardam*, B.Sc. A.R.C.Sc. Research Chemist, Woolwich Arsenal. Member Electrodepositors Technical Society.
3. "Recent Developments in British Plating Practice". *C. F. Francis-Carter*, Ch.E. Manager Plating Department, Serck Radiators, Limited, London, Eng. Member Electrodepositors Technical Society.
4. "Chemical Methods for Testing Thickness of Metallic Coatings". *S. G. Clarke*, Ph.D. Research Chemist, Woolwich Arsenal. Member Electrodepositors Technical Society.
5. "Review of Electroplating Methods in France". *M. Ballay*, Ph.D. Consulting Engineer, Paris, France.
6. "Chromium Plating Ware". *Dr. A. Guerillot*. Electrochemical Engineer, Sorbonne, Paris, France.

SECOND SESSION — TUESDAY MORNING JUNE 20TH — 9:00 A. M.

JOHN ACHESON, Presiding
President, Toronto Branch

1. "The Role of Diffusion in Electroplating Process". *Dr. J. T. Burt-Gerrans*, Toronto University, Toronto, Canada.
2. "Theoretical Training for the Electroplating Industry". *Dr. J. U. MacEwan*, Birks Professor of Metallurgy, McGill University, Montreal, Canada.
3. "Electrodeposition of Black Molybdenum Finishes". *R. A. Hoffman and R. O. Hull*, Cleveland Branch. E. I. du Pont de Nemours & Company, Cleveland, Ohio.
4. "The Ampere Hour Meter". *Burton G. Daw*, St. Louis Branch. President, LaSalco, Inc., St. Louis, Mo.
5. "Current Density Range Characteristics: Their Determination and Application". *R. O. Hull*, Cleveland Branch. E. I. du Pont de Nemours & Company, Cleveland, Ohio.

THIRD SESSION — TUESDAY AFTERNOON, JUNE 20 — 1:30 P. M.

CHARLES C. CONLEY, Presiding
President, Dayton Branch

1. "Chromium Plating Dies and Gauges". *D. A. Cotton*, Anderson Branch, Director of Research, Delco Remy Division, General Motors Corporation, Anderson, Ind.
2. "Anodic Coating of Aluminum". *Dr. Junius D. Edwards*, Assistant Director of Research, Aluminum Co. of America, New Kensington, Pa.
3. "The Application of X-Ray Diffraction to Electroplating Problems". *Herbert R. Isenburger*, St. John X-Ray Service, Inc., Long Island City, N. Y.

4. "Bright Dips for Non-Ferrous Metals". *Dr. Walter R. Meyer*, Bridgeport Branch. Editor Metal Industry, New York.
5. "A Study of Nickel Anode Corrosion and Loose Nickel Phenomena", *T. P. McFarlane*, Thesis for M. S. University of Cincinnati, Cincinnati. Ohio.

FOURTH SESSION — TUESDAY EVENING, JUNE 20TH — 7:30 P. M.

JOSEPH UNDERWOOD, Presiding

President, Philadelphia Branch

1. "A Study of Electrolyte Films". *Dr. A. Kenneth Graham*, Philadelphia Branch. Consulting Engineer, A. Kenneth Graham and Associates, Jenkintown, Pa., and *Dr. Harold J. Read*, Instructor in Electrochemistry, University of Pennsylvania, Philadelphia, Pa.
2. "The Story of Steel for Electroplating". *Frederick Fulforth*, Philadelphia Branch. The Proctor Electric Co., Philadelphia, Pa.
3. "The Modern Generator and Rectifier". *Guerin Todd*, Chief Engineer, Hanson-Van Winkle Munning Co., Matawan, N. J.
4. "Time Pieces–From Sun Dial To Wrist Watches". *L. A. Critchfield*, Philadelphia Branch, Hamilton Watch Co., Lancaster, Pa. This will be of interest to the Ladies. The HamiltonWatch Co. is lending their collection of time pieces for this paper.

FIFTH SESSION — WEDNESDAY EVENING, JUNE 21ST — 7:30 P. M.

JAMES W. HANLON, Presiding

President, Chicago Branch

1. "Addition Agents in Electroplating Processes". *Dr. Frank C. Mathers*, Professor of Electrochemistry, University of Indiana, Bloomington, Indiana.
2. "A Review of Finishing Methods". *Gustave Klinkenstein*, Newark Branch Vice President and Technical Director, Maas & Waldstein Co., Newark, N. J.
3. "Agitation". *Donald Wood*, Boston Branch, Reed and Barton, Taunton, Mass.
4. "Adhesion of Electrodeposits". *Frank C. Mesle*—Oneida Ltd., Oneida, New York.
5. "Practical Suggestion for Efficient Plating Lay-out". *D. R. Hartshorn, Jr.*, Springfield Branch. Chemist Westinghouse Electric & Mfg. Co., Springfield, Mass.

SIXTH SESSION — THURSDAY MORNING, JUNE 22ND — 9:30 A. M.

RALPH J. LIGUORI, Presiding

President, New York Branch

1. "The Effect of Certain Wetting Agents Upon Nickel Deposits". *Dr. C. B. F. Young*, New York Branch.
2. "Summary of Activities on Electrodeposition at National Bureau of Standards". *Dr. William Blum*, Chemist.
3. "Porosity Tests for Nickel Coatings on Steel". *P. W. C. Strausser*, Research Associate A. E. S. National Bureau of Standards.
4. "Dropping Tests for Zinc and Cadmium on Steel". *A. Brenner*, Chemist. National Bureau of Standards.
5. "The Measurement of pH in Alkaline Plating Solutions." *M. R. Thompson*. Chemist, National Bureau of Standards.
6. "Some Effects of Anode and Position on Cathode Current Distribution". *C. Kasper*. Chemist, National Bureau of Standards.
7. "A Study of Silver Plating for Industrial Applications". *C. S. Lowe and A. C. Simon*. Metallurgical Division, National Bureau of Standards.

LADIES' PROGRAM AT THE CONVENTION

Monday Morning	Opening session.
2 to 4	Get together tea at Berkeley-Carteret Hotel.
Evening	International Fellowship night at the Berkeley-Carteret Hotel
Tuesday Morning	Breakfast at 10:30 at the Monterey Hotel. Presentation of Gifts.
Afternoon	Open.
Evening	Theatre Party. Ladies will assemble in the Foyer Berkeley-Carteret Hotel.
Wednesday Morning	Ladies will leave by bus for ride along the shore, visiting Governor's summer home at Seagirt followed by luncheon at Marine Grill, Asbury Park.
Evening	Open.
Thursday Morning	Open.
2:30 p.m.	International Fellowship's Bingo Party at the Monterey, Joan Trumbour Wiarda (in charge). Refreshments will be served by courtesy of the Ladies' Committee of Newark Branch.
Evening	Banquet, entertainment, and dancing.

MEN'S PROGRAM

In addition to the program of the Educational Sessions, the men will leave by bus to visit the Anaconda Copper Works at Perth Amboy on Wednesday morning. From here they will go to Matawan, visiting the Hanson-Van Winkle-Munning Company's plant. Luncheon will be served at Buttonwood Inn on Lake Lefferts by courtesy of the Hanson-Van Winkle-Munning Company.

SHIPPING INSTRUCTIONS

for all exhibitors of articles to the Plated-Ware Exhibit of the International Convention of the American Electroplaters' Society to be held in Asbury Park, N. J., June 19-20-21-22 are as follows:

All exhibits are to be addressed to the exhibitor c/o American Electroplaters' Society International Convention, Berkeley-Carteret Hotel, Asbury Park, N. J.

The exhibits should be shipped via express prepaid to Asbury Park.

Sufficient packing material should be used as a means of protection in handling during expressing.

A refund will be forwarded to the exhibitor for the one way prepaid express charge by the Newark Branch.

Shipments should be made so that the exhibits arrive in Asbury Park before, and not later than, June 16.

Unpacking and arranging the plated-ware in the exhibit chamber will be done by the Newark Branch Exhibit Committee.

Every possible means of protection will be given the plated articles while on display during the four days of the convention.

The Plated-ware will be repacked and shipped back to the address of the exhibitor via EXPRESS PREPAID by Newark Branch.

Solvent Degreasing *and its* Application *to the* Plating Industry

By L. C. KROES
Detroit Rex Products Corporation
Detroit, Michigan

SOLVENT degreasing is a process in which liquid solvents are used at elevated temperatures for the removal of oils, greases, waxes, fats, tar, pitch and similar substances from metals, combinations of metals, plastics, glass and, in fact, most any known substance that will withstand a temperature close to 200° F. It is a process whereby any type of oil or grease may be removed practically instantaneously without causing tarnish or corrosion, without altering any polish or luster, and without causing any chemical or mechanical attack on the base.

Many solvents have been suggested and tried for use in the solvent degreasing process. They are all members of a group known chemically as chlorinated hydrocarbons—in other words, they consist of different combinations of the elements hydrogen, carbon, and chlorine. Of the group of fifteen or more commercially known chlorinated hydrocarbons the one predominantly used for solvent degreasing is trichlorethylene. Since trichlorethylene has been almost universally selected as the base for degreasing solvent it might be well to consider why this chemical compound was selected.

1. Under ordinary conditions it is non-inflammable, in fact, will put out a fire like other chlorinated hydrocarbons used in fire extinguishers.

2. Its vapors are approximately four and one half times as heavy as air and may, therefore, be used without excessive defusion. The weight of the slow-moving molecules of solvent vapor causes them to have a slow mixing rate with air.

3. Tricholorethylene has the low boiling point of 188 degrees F., which is 24 degrees below the boiling point of water. It has another thermal property that saves fuel in heating the solution.

It requires just about one fourth as much heat to bring a pound of solvent to its boiling point as to bring a pound of water to its boiling point, and once that temperature has been reached, it then requires only one third as much heat to vaporize the solvent as to vaporize the water.

4. For practical commercial use chlorinated hydrocarbons must be stabilized and trichlorethylene lends itself best to chemical stabilization. The most highly stabilized solvent will not break down even in the presence of many materials, such as water and aluminum which were formerly considered serious obstacles.

In the ensuing discussion when the word "solvent" is used reference will be to commercial chemically stabilized trichlorethylene which is available in different degrees of stabilization and sold under various trade names.

II.

Now that we have considered the solvent used, the question arises "What can we do with it?" The applications are numerous —they range from the cleaning of optical lenses to the degreasing of human bones in medical schools, from the degreasing of tiny screw machine parts to the preparation for finishing of refrigerator cabinets, beer cans and automobile fenders. The application which we are to discuss, however, is that pertaining to plating.

Briefly, degreasing may be described as an efficient means for removing dirt. The dirt encountered in the plating room is familiar to all of you. The dirt which must be removed can be divided into two classes of materials. There is that class of dirt including oils, greases, fats, and sulphonated compounds, abrasives, cutting and coloring compounds and so forth. These adhere to the work, but are really not a part of it. The other class includes metal oxides, sulfides, and scale which actually are a part of the work and can be removed only by chemical action as in acid or cyanide dips or by mechanical means such as tumbling, hand-scrubbing or wiping. Solvent degreasing applies only to the first class.

The applications of solvent degreasing in electroplating shops are many. The following is a list of some of these applications:

1. Removing mill rolling and rust proofing oils from metal before plating. Solvent degreasing removes not only the surface oils, but also the oils in the pores of the metal.

2. Removing stamping, drawing and cutting oils prior to bright dip. Solvent gives uniform oil removal and uniform bright color, evidenced particularly on brass.

3. Removing stamping, drawing and cutting oils prior to polishing and buffing. This eliminates loading of wheels and smudging of work. Cutting is faster, wiping easier and wheel life longer.

4. Removing stamping, drawing and cutting oils prior to plating, thereby keeping subsequent solutions, such as acid pickles, cyanide dips and plating baths, free from oil contamination and oil scum on top of the solution.

5. Removing stamping oils from pre-plated stock after stamping or forming. Pre-plated stock such as nickel used in vanity cases is stamped or formed, then the oils used in fabrication are removed by degreasing and the surface remains lustrous without signs of streaks or water spots.

6. Extracting and removing winding oils from tightly woven wire cable prior to plating. A common illustration is extracting oil from the wound cable or temple of eye-glass frames. Formerly soaks of different tanks of gasoline over a period of six hours were required. With solvent only three minutes is necessary.

7. Removing stamping, drawing and cutting oils, also buffing compounds from aluminum prior to aluminum coloring or anodizing. Solvent not only does a thorough oil removing job, but eliminates alkali attack and water stains which show through the colored surface.

8. Removing buffing and polishing compounds from die cast metal. Solvent degreasing does not attack the metal surface, as is the case when strong alkali solutions are used to remove the dirt.

9. Removing quenching oils prior to electrolytic descaling and plating. Solvent extracts oil from under loose heat scale and prepares work for electrolytic descaling so that tin or lead flashes to the base metal uniformly, thus protecting same from hydrogen embrittlement.

10. Removing lapping compounds prior to plating. This application is prevalent in hard chrome plating of tools and dies.

11. Removing buffing compounds prior to plating. Agitation of boiling solvent or the mechanical action of sprays removes not only grease, but abrasive, lint and other insoluble matter from most surfaces, thereby eliminating hard scrubbing operations.

12. Removing buffing and coloring compounds after plating. This might be in preparation for final finishing or in preparation for clear or colored lacquer. Work being thus prepared requires complete oil removal, natural bright luster, absence of dust films, and of vital importance is freedom from any streaks or stains. Solvent degreasing serves all of these requirements.

13. Removing tripoli compounds before buffing. Work coming out of the degreasing operation is free from grease and dry and subsequent color buffing is thus speeded up.

14. Removing stop-off waxes from steel prior to carburizing. Waxes used for stop-off are not soluble in water. Solvent puts these waxes into solution and eliminates the fire hazard encountered with previous methods.

The above cleaning operations may be performed with solvent in electro-plating shops for all kinds of metals and with any combination of metals in contact with solvent at the same time. Solvent degreasing is essentially not a physical-chemical cleaning process in which the even softest metals are not attacked and come out of the solvent with their natural luster free from tarnish, stains or spots.

III.

Let us now consider the simplest cycle for cleaning by the solvent degreasing process. In the vapor method of solvent cleaning the machine has one compartment in which the liquid content is sufficient to cover the heating elements or steam coil to a depth of at least six or eight inches. It might also be stated at this point that the heating means for a solvent machine may be steam, gas, or electric. When the heat is turned on, the solvent boils and causes vapor to form within the machine. The height to which the vapor may rise, is controlled by a condenser which is kept cool by continuously running water. When the

hot solvent vapors come in contact with the cold condenser surface, they immediately condense and run back to the bottom of the machine. The capacity of the condenser for absorbing heat in condensing solvent vapor is so balanced with the rate of heat input that the true vapor line in a machine is at the center of the condenser and under no circumstances should vapors rise over the top of the condenser.

The work to be cleaned is lowered into the space containing vapors but does not come in contact with the liquid solvent. When the hot vapors come in contact with the cold work, the vapors condense, run off the work in a liquid form and carry the grease in solution to the bottom of the machine. To illustrate how liquid solvent will take oil into solution we will place a few drops of ordinary oil in some solvent. Note how quickly and completely the oil has gone into solution.

When the temperature of the metal reaches the temperature of the vapor (188° F.), practically no more condensation occurs, and unless the metal is again cooled, the vapor will do no more cleaning. Since a heavy piece of metal will condense more solvent vapors, a higher degree of cleanliness will result when compared with very light gauge work which has less heat absorbing capacity.

It should be borne in mind that we have discussed so far only vapor cleaning. In simple vapor cleaning, there is no mechanical action present so the amount of insoluble matter removed is almost nil as compared with other phases of degreasing. While the vapor method of cleaning has a wide application, its field is somewhat limited particularly when cleaning before plating. Platers usually have a lot of insoluble matter to remove from the work. It is unfortunate that many associate solvent degreasing with vapor cleaning only. We will now discuss other cycles of solvent degreasing and show how they broaden the field for the application of the degreasing process.

In the *immersion degreasing* process, the work is subjected to a cycle of boiling solvent, liquid rinsing, and final vapor cleaning. This cycle is applicable for cleaning all type of oils, fats, and greases from all gauges of metal and for the removal of

all insolubles such as buffing compound, lapping compound, drawing compounds, shop dirt, etc.

The work is first placed in the boiling solvent where it is subjected to the mechanical scrubbing action of the boil while at the same time, the oil, fat, or grease goes into solution. The work is then transferred to a clean cool rinse to dilute any oil film carried from the dirty boiling solution and the temperature of the metal is lowered so that vapors will condense on the work in the final phase of the cycle. The action in this final phase is similar to that described above in the vapor method of cleaning. The work comes out of the machine clean hot and dry.

In the immersion type degreasers the rinse chamber is constantly supplied with a quantity of clean liquid solvent. The liquid which condenses on the water jacket is collected in a trough around the inside of the machine and fed into the rinse chamber. Thus the rinse is constantly being cleaned or renewed with the clean solvent. In two compartment machines the rinse liquid then overflows back into the boiling chamber. In three compartment machines, used for higher production, the rinse liquid overflows into the vapor chamber and is then pumped back into the boiling compartment.

Another cycle of the solvent degreasing process has been called the *vapor-spray-vapor* method of cleaning. The work first passes into a vapor area where partial cleaning takes place, the solvent condensed on the work running back to the boiling chamber from whence the vapors emanate. The work then passes under or between pressure sprays of clean solvent which acts to remove insoluble matter and to cool the metal so that vapor will again condense on the work in the final third stage of the cleaning operation. The temperature of the metal rises to that of the vapor in this third stage and the work again comes out clean hot and dry. The degree of cleanliness resulting from this cycle of cleaning is about the same as that with the boil-rinse-vapor cycle cleaning. Sprays should be directed at a 45 to 90 degree angle of contact to work for best removal of insoluble matter. This latter cycle of cleaning is mostly used in conveyorized equipment.

The *vapor-slush* cycle of cleaning is but a modification of the

vapor-spray-vapor applied to hand operated equipment. The vapor-slush-vapor degreaser is similar in construction to a hand operated vapor machine with the addition of a reserve compartment in the storage tank for collecting condensed solvent from the condenser. This clean solvent is sprayed over the work under pressure, through a flexible hose and nozzle operated by hand. The application of the vapor-slush-vapor cycle is to remove insolubles which will not clean with vapor alone, to clean light gauge metal, and to reduce machine size to smallest possible dimensions for cleaning large objects. Work handling is also reduced to one operation.

In all of the above cycles of solvent degreasing it should be noted that final cleaning was always done in vapor. It is quite evident that you cannot clean in a dirty medium. In plating work we want not a cleaner surface, but a clean surface. Because of different boiling points, only the solvent will vaporize out of the boiling liquid. No matter how dirty the boiling liquid becomes, only clean vaopr will form above. In immersion cleaning, boiling solvent alone would not suffice. The liquid would soon become contaminated and the surface of the metal would be no cleaner than the liquid itself. One of the most important reasons why solvent degreasing is advantageous is because the final cleaning is always done in a thoroughly clean medium.

DEMONSTRATION

You have all heard the old saying that "seeing is believing". We have with us tonight a small degreasing unit of the two compartment type. In it we will clean various kinds of work for your inspection. In this machine we can illustrate four cycles of cleaning, namely: 1. boil-rinse-vapor, 2. liquid vapor, 3. vapor-rinse-vapor, and 4. vapor.

1. Clean connecting rod in vapor.
2. Incomplete cleaning of light gauge metal. Repeat after air cooling.
3. Cleaning of light gauge metal by immersion.
4. Cleaning of metal stuck together with oil.
5. Dissolving of paraffin.
6. Boil-rinse-vapor cleaning of tripoli.

Membership Campaign

June 1, 1939

Branch	Elected	Reinstated
Detroit	110	6
Philadelphia	38	2
Chicago	36	
St. Louis	34	
Grand Rapids	28	2
New Haven	26	
Buffalo	21	
Cleveland	17	
New York	17	5
Newark	16	1
Los Angeles	12	
Toronto	11	1
Milwaukee	11	
Bridgeport	10	
Dayton	9	1
Pittsburgh	8	1
Boston	7	1
Hartford	7	
San Francisco	6	
Rochester	5	
Cincinnati	4	2
Providence-Attleboro	4	1
Binghamton-Syracuse	4	
Toledo	3	
Springfield	2	1
Waterbury	2	
Anderson	2	
Montreal	1	2
Baltimore-Washington		

Advanced Technique *in* Polishing

By J. F. SIEFEN
of the J. J. Siefen Co.

THE polishing of metal, preparatory to plating or painting has followed the same uniform procedure for as many years as polishing has been done. The polisher would "rough out" the work choosing the coarsest grain with which the job could be done economically, and then by using smaller size grains for each succeeding operation, proceed to the finish desired for paint or plate. It was impossible for him to use a fine grain to remove any roughness on the metal, but if he did, it would take too much time and naturally the fine grain wheels wouldn't stand up.

Economy made it necessary to use as few operations as possible but many times the people who paid for this polishing couldn't understand why the cost of the majority of jobs was excessive. Under existing conditions, nothing could be done to reduce polishing costs so other methods were used. Sheet steel came from the mills with a finish unthought of in previous years. The improvement in steel also led to the making of better dies to stamp parts that required very little polishing. Permanent moulds were substituted for sand moulds; even castings were improved by a better knowledge of smelting and pouring. Drop forgings, both of steel and brass, came from forging dies with a very good finish that reduced polishing to a minimum.

The demand for reduced cost was heard throughout the industry and as a consequence many articles were produced with a paint or lacquer finish that needed no previous polishing, others required only a slight touch-up. This resulted in a marked decrease in production throughout the polishing trade. The polisher could do nothing to retard this menace to his job. He could do nothing to eliminate any of the polishing operations, for example cast iron required No. 60, No. 80, No. 120, No. 150, No. 180 grain sizes. If he tried to cut out one of these grain sizes and do the job with less operations, the work was rejected for

bad appearance, or if he did a good job, he took too long and no money was saved. The same trouble pursued him if a better piece of work was demanded. Suppose he had a piece of cold-rolled sheet steel that he was polishing on a No. 180 oil wheel, and a better finish was required; a two wheel job was necessary as a finer wheel could not remove die and handling marks fast enough.

The principle of American business has always been "An improved product at lower cost". Therefore, except in isolated cases, the polishing industry has lost tremendously. The best example of this is the stove industry. The amount of polishing being done today in all industries would be considerably less if chromium plating with its permanent lustre and brilliance had not come along when it did.

Let us look at the reason why polishing could not be done any other way. The standard adhesive for holding grain on a polishing wheel was hide or animal glue. Many other materials were tried but the only adhesive that would do a decent job was hide glue. It had limitations but served its purpose for years. The greatest drawback was the low melting point, as it softened under the heat of polishing and as a consequence the grain was not held in a position to do much cutting. A piece of work that was polished on No. 80 grain had to be polished next on No. 120 grain because if the operator used No. 150 after the No. 80, so much heat was generated in taking out the No. 80 marks that the head softened and the wheel stopped cutting. It was just a waste of time to use a No. 150 after the No. 80 if the polisher wanted to remove all the No. 80 marks. This was true of any sequence of operations or even of one operation work. If too fine a grain was used, the heat generated was too much for the hide-glue set-up head to endure.

This condition existed until about five years ago when "cement", a silicate base adhesive that could be used cold, appeared on the market. This "cement" was remarkable, in its way, inasmuch as it made the polishing wheel set-up last as much as three to five times longer than a glue set-up wheel. This helped the polishing industry quite a bit in reducing costs, but

it did not eliminate operations or reduce costly labor processes. One of the qualities of "cement" is fast cutting. Fast cutting though, is accompanied by a harsh deep scratch and generally needs to be followed by the next size grain in order to remove these deep scratches. This is illustrated by the following example: Work is polished with No. 100 grain on a cement set-up wheel and these marked are removed by a No. 120 wheel set-up in glue. This is the usual procedure when using "cement".

Nuglu, a liquid adhesive used cold, has eliminated the drawbacks of both hide glue and "cement". It does not cut harsh and leave deep scratches in the work, but it does cut fast enough to remove any roughness on metal. Unlike hide glue, it does not soften under heat. An actual test in one of the large automobile companies showed that two glue set-up wheels burned in three and four minutes respectively, while a *Nuglu* set-up wheel couldn't be burned although it was tried for twenty-five minutes.

A change therefore is taking place in the polishing room. Heretofore, work had to be polished by a gradual decrease in size of grain for each operation. Now, with *Nuglu* set-up wheels, longer steps can be used and thus reduce the cost of any job. This sounds as revolutionary as the first tungsten steels for tools, the use of electric arc smelting for brass, or the use of hard chromium plating on dies, but it is actually being done in production.

Previously, a polisher used No. 80, No. 120, No. 150, No. 180, now he can polish with only No. 80 and No. 180. Previously, he polished with No. 120, No. 150, No. 180, No. 220. Now he can polish with No. 120 and No. 220. Possibly he used cement for roughing out and glue for the balance of the operations, similar to this: No. 100 cement and No. 120, No. 150, No. 180 glue set-up wheels. Now he can do the same job with No. 80 and No. 180 *Nuglu* set-up wheels, saving two operations. This is accomplished simply by the manner in which the grain is held and the rate it is allowed to fracture, both very important facts when fundamentals are considered: Grain is held by the adhesive and small particles fracture from it presenting new cutting surfaces to the work. A hide glue set-up wheel cuts well

at first, but quickly loses its efficiency as the head heats up. The grain is buried into the glue, bends with the work, does not fracture, and cannot cut. It burnishes. The amount of metal it removes is negligible and consequently a No. 180 wheel can only remove No. 150 wheel marks economically. The wheel set-up with *Nuglu*, however, allows the proper fracture of each grain and inasmuch as heat will not effect it, the grain is always held so that it fractures properly and cuts uniformly over its entire long life. Therefore, a No. 180 wheel will remove economically polishing marks made by an No. 80 or even a No. 60 wheel.

Do not confuse the rate of cut and the depth of cut. We used to believe that the faster the cut the deeper the cut. This is not true. The rate of cut depends on the hardness of the head and the manner of presenting the grain to the work. The depth of cut depends on the flexibility of the wheel and head, the size of grain, and the size of the break-up. A newly set-up wheel will cut deeply until the head has been broken in and then cut as it should for the grain size on the wheel. The smaller the break-up on the head, the better the finish.

Nuglu breaks up into very small clusters of grain thereby giving a smooth finish but at the same time it holds each grain in such a way that it does its share of work while it is on the wheel. These are the reasons why a step as large as 120 numbers of grain can be made successfully. Another reason is that on oil wheels set-up with glue, whole grains are broken off the wheel and start rolling on the face, held on by the grease. These grains do not cut but produce a matt finish preventing the grains that are held on the wheel from cutting.

Nuglu holds each grain until it has done its share of work. This quality is also cost reducing for one-operation work. Sheet steel parts such as automobile fenders and bodies require only one operation. This operation must be done fast and at the same time must be smooth or else additional work such as sanding must be done to prepare them for paint. *Nuglu* maintains an open free-cutting face on the polishing swheel, but it does not cut deep scratches into the work because the head breaks up into small clusters.

The use of *Nuglu* to jump 100 or 120 numbers of grain is not its only advantage. Additional cost may be saved by using the final grain size without greasestick or oil of any kind. When used in this way, work is produced that has a beautiful appearance and a very smooth surface. It may be plated and buffed in the usual manner with a finer finish than a piece that is "oiled out". Experimental work has been done using the final wheel dry on both steel and brass and several plants are now using this method for production work. Factories producing plated steel are saving on consumption of grease, handling of the bar of grease, and the unpleasant task of resetting a grease wheel. Further savings are effected in plating when work enters the plating room without grease on its surface. Factories producing brass products have saved in buffing costs as the work is easier to buff when no grease is used for the final polishing operation.

Grease has always been used in the polishing room on the final wheels. It is used only to lubricate the wheel and keep it cool. *Nuglu* is not affected by heat and consequently needs no lubrication. The break-up on a *Nuglu* set-up head, being very small produces a very smooth finish and a beautiful color that makes subsequent buffing much easier. The average piece of work may require a slightly smaller size of grain but this is an advantage rather than a detriment. The smaller size grain cuts faster without grease than the regular size grain with grease. Here again, the rate of cut must not be confused with the depth of cut.

A little experimenting will soon tell just what size grain should be used.

The development of *Nuglu* has provided a means of reducing cost so that polishing can be done economically and efficiently. No longer will jobs be lost by excessive polishing costs. Instead, by reducing the cost of polishing, additional work will come into the polishing and plating room. The demands for reduced cost have been answered!

International Fellowship Club

Within a few days from the time these lines are written The American Electroplaters' Society will be in session, holding its annual International Convention.

The values to be derived from these conventions are countless. The interesting papers presented at the various educational sessions . . The exchange of ideas . . . The promotion of new materials . . . All serve to better fit the plater, the lacquer operator and the production man to carry on his daily tasks with greater efficiency during the coming year.

Not the least in importance is the good fellowship which prevails throughout the days and nights of the convention. The hours of relaxation between business and educational sessions is the time when old friends meet . . . Friends of years back, but, unfortunately, friends who in many cases see each other but once a year at these annual gatherings. Of great importance concerning these friendly get-togethers is the Open House of the International Fellowship Club. At these meetings complete relaxation prevails and thoughts of the more serious things of life are tossed aside. The aim of the evening is toward the promotion of Good Fellowship without which the world would indeed be a dreary place in which to live.

Good Fellowship! These are but two words, which, when uttered hastily may lose some of their full meaning. But when analyzed it will be found they have a mighty important meaning.

To the International Fellowship Club I extend my hearty greetings and sincere wishes for every success not only for this year but through the many years which lie ahead.

BEN POPPER

Business and Social News

BRANCH NEWS

Educational Activities

DETROIT BRANCH

Minutes of meeting of Detroit Branch of A.E.S., held at the Hotel Statler on Friday, June 2, 1939 at 8:00 P. M.

The meeting was called to order by President J. W. Higgins with all the newly elected officers present.

The minutes of the May 5th meeting were read and approved.

Mr. Southwick, Chairman of the Exhibit Committee, reported suitable progress was being made and the exhibit would be ready for the convention.

The President made the following appointments:

Mr. H. M. Cherry, Chairman of the Entertainment Committee.

Mr. A. B. Wilson, Chairman of the Educational Program Committee.

It was decided to have the usual Branch picnic and outing but the date and place would be announced later when arrangements were made.

There were no new members for election, but two applications were received and referred to the Board of Managers. These applications were from Richard J. Amberg, Johns-Manville Sales Corporation, for associate membership, and Mr. Frank Wilber of Cadillac Motor Car Division for active membership. The resignation of Mr. R. G. Grostick, associate member, was accepted.

The speaker of the evening, Mr. J. A. Stifter, President Milburn Co., Detroit, was then introduced and gave an interesting talk on "Industrial Dermatitis in Electroplating".

After Mr. Stifter finished answering questions concerning his subject of the evening, Dr. Saltonstall took charge of the question box and started lively discussions among the members on each question.

Meeting adjourned on motion by the President.

W. W. WILSON, *Sec.-Treas.*

BRIDGEPORT BRANCH

The regular meeting of the Bridgeport Branch was held on June 1, in the Chamber of Commerce Rooms at the Stratfield Hotel.

Joe Sterling, chairman of the Exhibit Committee reported the following members will have exhibits at the convention: Elmer Monson, Underwood Eliott Fisher Co.; George Wagstaff, Acme Mfg. Co.; J. E. Charleson, Yale and Towne; Wm. A. Ehrencrona, Casco Products; Wm. Flaherty, Excelsior Mfg. Co.; Clarence Helmle, General Electric Co.; Axel Boggild, General Electric Co.; Joe Sterling, General Electric Co.

The Sick Committee had nothing to report.

New Business: Dr. Meyer made a motion which was carried to hold the annual outing early in September. President Ehrencrona appointed Joe Sterling, Gene Phillips, Elmer Monson to the outing committee.

Chick Helmle gave his report, outlining the activities of the chemistry class the past year. The lectures were highly satisfactory to the members attending the course.

Motion made and carried that the bills of the Branch be paid.

The application of Edward F. Hill

was favorably acted on and he was elected as an associate member.

Treasurer's report read and accepted.

Educational Session: Librarian Chick Helmle started an interesting discussion regarding removal of impurities from bright nickel solutions. A great number of the members participated in this discussion.

Meeting adjourned 10:00 P. M. About 25 members were present.

EUGENE PHILLIPS, *Sec.*

BOSTON BRANCH

Meeting called to order with President DeLorme in the chair. Minutes of the previous meeting read and approved.

Communications read, one of the coming convention and the amendment of Milwaukee Branch. These were taken up under new business.

Bills read and moved they be paid.

A report was made by the banquet committee but no final report can be made at this time. We hope to make a final one in the fall.

The following officers for the coming year were elected: President, Edward C. DeLorme; Vice President, William Jones; Secretary-Treasurer, A. W. Garrett; Librarian, Edmund Jeveli; Sergeant-at-Arms, George B. Leeser. Board of Managers, Chairman Charles O. Hardy, George A. DeLorme, and Thomas F. Barron.

Delegates to the Convention as follows, Andrew W. Garrett, Louis A. Gale and William Simonetti, Alternates, Arthur J. Mintie, Charles O. Hardy and Edward C. DeLorme.

The delegates were instructed to vote against the amendment of the Milwaukee Branch.

The exhibit committee will have it ready in time for the convention

There are a few more A.E.S. buttons left and can be had from the secretary.

The meetings of the branch were suspended for the summer and will start again in October.

A. W. GARRETT, *Sec.*

PROVIDENCE-ATTLEBORO BRANCH

Providence-Attleboro Branch held its regular annual business meeting and election of Officers in room 202 Narragansett Hotel Monday May 15, 1939.

President Chace was in the chair and after making a brief talk relative to giving up the chair that he has held for over 10 years, called for the order of business. The first was the reading of communications next there were the applications of Howard M. Poole and James F. O'Brien—applications were accepted, then the status of Mr. Hall was taken up and after discussion motion was made that Mr. Hall be given a Life Membership, seconded and carried. The report of the Secretary and Treasurer was read and accepted.

The matter of conducting a question box was discussed and deferred.

The nominating committee, John MacLean, James Potter, Arthur Wood, reported as follows: For President, William F. Cahill; Vice President, Bernard Ganley; Secretary-Treasurer, Donald Wood; Librarian, Robert D. MacLachlan; Board of Managers, C. C. Chace, Alton E. Tapner, John MacLean.

Report was approved and after remarks, the Secretary was instructed to cast the vote for the entire slate.

Mr. Chace then inducted the new President into the chair.

Following a few remarks of acceptance by Mr. Cahill, a motion was made that we have a dinner on June 26, 1939.

Delegates to the Convention were

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named as follows: Donald Wood, Mark Weisberg, Charles A. Law.

Alternates: Dr. Strachan, William F. Cahill, Joseph Smith.

Mark Weisberg was voted as an active member.

Voted that we adjourn.

JOHN ANDREWS, *Sec.-Treas.*

NEWARK BRANCH

The regular meeting of the Newark Branch, A.E.S., was held on Friday evening, May 19th, 1939 at the Club Room of the Hotel Douglas, Newark, N. J. The meeting was called to order at 8:30 P. M. with President John Kotches presiding. All other officers were present.

The minutes of the previous meeting were read and approved.

An application for Mr. Lloyd S. Burns to associate membership was voted to take the regular course.

Mr. Horace Smith announced that Mr. Roy Stout who is in charge of the Transportation Committee for the Convention would hand out cards on which some of the activities of our Convention Program is scheduled. He asked the members to fill out these cards in order to give the committee some idea of about how many from our own Branch will attend.

Under Election of Officers it was unanimously voted that our present officers remain in office for another year. Mr. Philip Sievering conducted the installation of officers in a very appropriate manner.

Delegates and Alternates to the Convention were elected as follows; Delegates: Horace H. Smith, George Wagner and Nelson F. Sievering. Alternates: John B. Kotches, Paul A. Oldam and George Reuter.

Under the order of new business it was decided that Newark Branch will have one meeting a month during June, July, August and September. In June the first Friday of the month and in July, August and September, the third Friday of the month.

The speaker for the evening was Mr. George Reuter who gave a very explicit talk on "Transfer Edging." Mr. Reuter exhibited numerous samples and gave a full explanation of the Edging Process. He promised to have his talk typewritten for publication in the MONTHLY REVIEW Mr. Reuter was given a rising vote of thanks by 52 members present. The Ladies Committee were present at this meeting and conducted their drawing after our meeting which adjourned at 10:30.

GEORGE WAGNER, *Sec'y.*

ROCHESTER BRANCH

On Friday night May 26th, the Rochester Branch held its regular

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monthly meeting at the Hotel Seneca. This was a strictly business meeting including the election of officers for 1939-40.

The following officers were elected to serve:-

President, Raymond L. DelRosso; Vice President, Francis P. Dougherty; Secretary-Treasurer, Judson R. Elster; Librarian, Arthur J. Moore; Board of Managers—It was decided to have a 4 man board instead of 3 as at present. Sylvester P. Gartland, Francis J. Kohlmeier, Raymond J. Berghold, Gerald A Lux.

The chair then appointed the following as chairman of various committees. Educational, John J. Desmond; Membership, Frederick H. Bruening; Entertainment, Gerald A. Lux.

A motion was then presented and unanimously accepted that the executive board, to consist of all the officers and chairmen of various committees should meet on the first Friday of every month for the purpose of transacting all routine business except that which of necessity has to be presented before an open meeting. This is for the purpose of doing away with a dull business session on our regular meeting nights and giving more time for speakers and an educational session.

The membership of Mr. Prescott A. Lyon, Whittier Rd., Coldwater, was ordered suspended.

The application of Charles N. Hendershott as an associate member was then read and he was duly elected.

The following were appointed by the chair to act as delegates and alternates to the Convention.

S. P. Gartland, J. R. Elster, E. A. Nill, Delegates; F. J. Kohlmeier, H. A. Cameron, C. H. Burnett, Alternates.

JUDSON R. ELSTER, Sec'y

ANDERSON BRANCH

The Anderson Branch of the A.E.S., held a dinner meeting Thursday evening at 6:30 P. M., at the Y.M.C.A. President Dr. M. M. Beckwith presided.

Following the dinner a business meeting was held. Our President Dr. M. M. Beckwith tendered his resignation due to the fact that he leaves Anderson and Guide Division of General Motors to take a position with J. B. Ford Sales Co., of Wyandotte, Mich. This means a great loss to the Anderson Branch but we want to wish Dr. Beckwith a lot of luck in his new position and thank him for the services that he has rendered this branch in the past. Mr. E. L. McKinney was elected to succeed Dr. Beckwith as President and Mr. C. F. Hauri was elected to succeed Mr. McKinney as Vice President. It was

moved by Mr. Wagner that our regular meeting date be changed to the second Tuesday of the month instead of the first Monday of the month. Seconded by Mr. Geoorge Onksen and carried. Plans for a membership drive were discussed and Mr. L. R. Hinsch was appointed chairman of the membership committee consisting of Mr. L. R. Hinsch, Mr. C. Wilson and Mr. G. M. Cole.

Following the business meeting a general discussion of miscellaneous plating problems was led by Dr. Beckwith and many interesting questions were brought up and discussed. It was a very informative meeting with everyone taking part.

Meeting adjourned at 10:15 P. M.

OTTO MCCALLISTER, *Sec'y-Treas.*

GRAND RAPIDS BRANCH

Grand Rapids Branch held their regular meeting May 11th in the Esquire room of the Hotel Rowe. The minutes of the previous meeting were read and approved.

President Charles Werft, in a few remarks, thanked the members for their consideration in electing him to the office of President for another year.

Mr. Dykhuis of Holland, Michigan was reinstated to membership and the application of Mr. F. D. Pace was favorably acted upon.

Mr. Caldwell and Mr. Sperry were appointed on the Educational Committee for the coming year.

The question of discontinuing our regular meetings for June, July and August was placed before the members by our President.

The meeting was turned over to our Librarian who introduced Mr. Perry A. Martinson of the Johns-Manville Corporation.

Mr. F. A. Martinson of the Johns-Manville Company presented the sound film "Celite, the Story of the Diatom".

This instructive and interesting film was very well edited. Tracing back to the lowly origin of the diatom in the Miocene Era the film shows many varied uses for the remains of these micro organisms as they are present today.

The value of diatomaceous earth to the plating industry comes in its application as a filter aide in filtration of plating solutions. This silicious material is chemically inert to most plating solutions and affords a porous median through which solution may be filtered, thus removing sludge and suspended matter. The presence of "Filter aides" mixed with the solution prevents clogging by building a more porous cake on the filter.

Mr. Martinson answered several

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practical questions on filtering problems. He also mentioned that many different prodes of the same material are available. These cover a wide field of filtering applications.

The technical aspects of the films are especially worth mention. The photography of the varied diatom shapes, and their life processes make this film one of the most entertaining we have had the pleasure of enjoying.

CHESTER W. SMITH, *Librarian*

BINGHAMTON - SYRACUSE BRANCH

The regular monthly meeting of the Binghamton-Syracuse Branch of the A.E.S., was held at the Cortland Hotel, Cortland, New York, Friday May 26. This was a business meeting for the election of delegates to the Convention also election of officers for the coming season.

We had about 15 out for the meeting which was considered quite satisfactory considering how close to the holiday it was. After the usual difficulties had been overcome, the following officers were elected for the new season; President, Jack Harnett of the Agfa Ansco Corp., Binghamton, N. Y.; Vice President, F. W. Kenyon of the Higgins Supply Co., McGraw, N.Y.; Librarian, Austin Fletcher of the Brewer Titchener Co., Binghamton, N. Y.; re-elected, Secretary-Treasurer, George Simmons of the H. M. Quackenbush Co., Herkimer, New York reelected.

Our retiring President, Bill Mahar of Fulton, N. Y., was in fine form giving us in his valedictory plenty to think about, we shall Bill presiding but will know he will always be on hand even though he does have to travel 100 miles to every meeting.

Mr. Harnett one of our Charter members, will we know make a splendid President, his parliamentary procedure may not be quite up to Bill Mahar's (who knows the constitution backwards) but he makes up for that in his beautiful voice and command of English.

Mr. Kenyon one of our new members has been a very active associate since joining us and will make a very dignified M. C. whenever called upon.

Everybody knows Librarian Austin Fletcher's his determination to give up all active participation in our Branch affairs brought forth a storm of protest from everyone present, he was finally prevailed upon to change his mind, we all realize he has increasing domestic responsibilities but felt that one new daughter was hardly reason enough

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to give up office especially since Bill Mahar has 10 in the family.

We also elected as our Board of Managers, the Langemeyer Brothers Bill and Herb from Syracuse, N. Y., who are always on the job, and George Fahrenz. Austin Fletcher's able assistant.

We of the Binghamton-Syracuse Branch feel that we feel should grow in knowledge and numbers next season and the new officers pledged themselves whole heartedly to this end.

The Convention delegates were next elected as follows; Delegates, Jack Harnett, Earl Lutz, and A. Fletcher; Alternates, Larry Meyer, F. Kenyon and John Vitale, Proxy Joe Haines.

We were glad to welcome one of the older members of the A.E.S., who has recently transferred to this branch from Milwaukee, Mr. Paul Kramarcik, we trust we shall see him often.

After refreshments had been pertaken of, and the (election of a Sergeant at Arms suggested) the meeting was adjourned until fall when we feel sure a real program of educational progress will have been mapped out for the 1940 season.

The secretary wishes to thank all the officers and members of the Branch for the cooperation given him and trust that it will be continued during his coming term.

GEORGE SIMMONS, *Sec.-Treas.*

TORONTO BRANCH

May 29, King Edward Hotel, owing to the King and Queen being in Toronto and also being a public holiday on the 22nd, our regular monthly meeting was put a week back and owing to the election of officers being held, President Acheson found himself facing a membership of 22 which was 50% of the usual, so the members knowing the past year to be a successful one, voted the same old gang back into power. But its the same old racket every year, if I am not at the crap game I won't be caught, those of us who can recall older days, remember the tram car horses, when they came to a hill the willing one always had the tight traces. But this is a bad precedent because we have younger members who are willing and are also able to hold the cue without tearing the cloth.

Letters were read from Mr. Albert O'Neill, Mr. M. Messing, Frederick Fulforth and George Wagner about Convention undertakings, etc.

Toronto members appreciate those

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letters of anticipation and will cooperate in the interests of our organization.

The branch will be well represented at Asbury Park, although it is hard to find out how many will be going.

Mr. Jack Walker was appointed to act as delegate with Mr. McHugh as alternate.

Harry Hands received a hearty vote of thanks for the way he kept the membership roll call, this system is rather tough on the delinquents. The secretary was given power to buy a new ledger account and expense books.

It was reported that Mr. Bottrell was still under the weather and Fred Bing was back to work.

Mr. Archie Smith and Mr. Byres were elected from associate to active membership.

Q. What will stop spotting out on cold rolled steel and brass castings after bronze plating?

A. Rinse in clean hot water, dip in alcohol and dry in mazo.

Q. Any member barrel plating with Black Ni.

A. No answer.

Q. Any member using gypsum for removing carbonates from Brass bath?

A. Mr. Bing has used it with satisfactory results.

Q. Any member using filter aids on brass sol?

A. Several members were using filter aids on brass Sol. Mr. Archie Smith submitted 3 steel forging door handles that had the largest and the deepest nickel pits that was ever seen this side of Niagara. Mr. Smith said they were plated along with other articles and only the forgings were pitted. They had the appearance of a termite migration, he was advised to use Sulfuric instead of muriatic as a dip.

Meeting adjourned.

J. S. CAIRNS, *Rev. Cor.*

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CINCINNATI BRANCH

At a special meeting of the Cincinnati Branch, held May 11th for the purpose of electing Officers for the coming year, the following Officers were chosen:-

President, Robert Knoepfler; Vice President, Ruben Pawsat; Secretary, Martin M. Gannon; Treasurer, Joseph Adler; Librarian, Frank Nordman; Board of Managers, Thomas Whitehead, Thomas Towner, Fred W. Vogel.

Thomas Towner, who as Chairman of the membership Committee who has accomplished so much with the assistance of the committee has again accepted the aforesaid task, which will no doubt mean further enlargement of our membership.

Mr. Ruben Pawsat, as delegate will represent the Cincinnati Branch at the Convention, as well as a display board for further representation.

At our meeting held May 25th, the

business routine was dispensed with, so that we might have ample time to devote to 3 features. Mr. Benner of the Dupont Co., delivered a talk on, "Experimental Developments of High Speed Copper Plating Solutions," which was presented in a way, easy to digest and lighly interesting and as one might suppose, questions followed, with answers to keep them company.

The Motion Picture Film, "The Wonder World of Chemistry," a du-Pont feature made a hit also, as well as the last but not the least feature, the Buffet Lunch which was served.

This created a fine feeling of fellowship among those assembled, which consisted of members, prospective members, and friends, 44 in number. It was quite evident that everybody in attendance felt that the evening was worth while, and worth repeating at some time in the future.

JOSEPH ADLER, *Sec'y.*

MONTREAL BRANCH

The Montreal Branch of the A.E.S., held its regular meeting on April 17th, 15 members were present including two prospective members, Messrs. Bertram Isles and J. Handford of Crane Co., and Canadian Hanson-Van Winkle Co., respectively and our guest of the evening, Mr. E. Honey of the Johns-Manville Co.

With the minutes of the previous meeting read and approved it was then proposed by Mr. H. S. Jordan and unanimously carried that Past Supreme President and Founder of the Montreal Branch of the A.E.S., Mr. John H. Feeley, be made an Honorary Member.

A conscientious and hard worker, Mr. Feeley certainly has merited this honor for much of the success of this Branch is due directly to his willing and personal contribution towards the betterment of the Society and fellow associates.

Regular business having been taken care of the meeting then adjourned to the Knights of Columbus Hall, Mountain St., where our guest Mr. E. Honey, gave a talk and moving picture illustration on diatomaceous earth and filterade, the subject proved to be highly interesting and educational. Mr. Honey answered all questions asked, the audience appreciating his explanations and knowledge of this little diatom so big in the world of commercial progress.

The evening having been enjoyed, all agreed that talks of this nature are very beneficial to the Society and expressed hope of hearing more of them in the near future.

A. W. JEROME, *Sec.*

TRY ON APPROVAL

NATROLIN

B-4 CHROME CLEANER

Guaranteed to produce bright chrome finish.

SULPHUR PRODUCTS CO. Greensburg, Pa.

(The Liquid Sulphur people)

ST. LOUIS BRANCH

Regular meeting of St. Louis Branch A.E.S., was held Friday, June 2 at central Y.M.C.A. Dinner was served to twenty members after which President Ricket called meeting to order

The first roll call of officers, two absent.

Minutes of previous meeting were read and approved.

Letter inviting delegates to spend June 17 and 18 in Philadelphia, that branch promising to show all a good time.

Election of members was next. Three were elected as follows:

Mr. Horace McMullin, 4619 Enright St., St. Louis Mo., Mr. F. Feeherty, 6222 Stillwell Ave., Pine Lawn, St. Louis., Mo. Mr. Herbert R. Hanley, Mo. School of Mines, Rolla, Mo., all active members.

Mr. E. J. Musick reported on membership drive, 33 members having been elected and Mr. Musick is to be commended for the fine work he has done the past year.

St. Louis branch will send an exhibit to convention.

Mr. Musick was then called on to install the new officers which he did in fine style and in return was given a vote of thanks.

Meeting then turned over to the Librarian. In absence of J. Vogt, A. Barth was appointed.

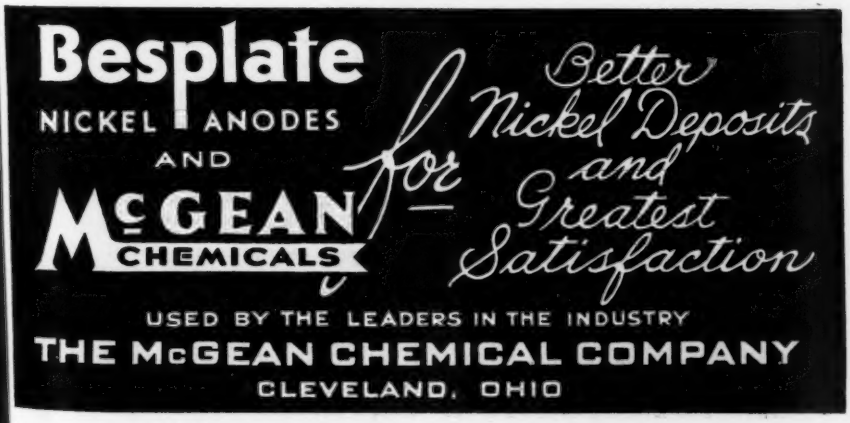
J. Humbracht gave a talk on "Bright Nickel" and some of the problems that arise. He stated cleaning played a very important part.

As some of the work he has to plate is tube furniture and grease sometimes stays inside, cleaning and rinsing will solve some of his problems.

Mr. L. Hoffmister of New Athens, Ill., attended. Glad to have you, come often.

Nothing further, meeting adjourned subject to the call of the President.

C. T. MCGINLEY, *Sec.-Treas.*



KOCOUR ANALYTICAL SET
FOR SILVER ELECTROPLATING SOLUTIONS
Determines Metal Content, Free Cyanide and Carbonate

This control set, enables anyone to rapidly determine the condition of a silver solution. It is well understood that maximum efficiency is obtained only when solutions are maintained at proper concentration of the various ingredients. Such factors as the time necessary to deposit a given thickness, the current density permissible, the non-porosity of the plate, and the appearance of the deposit are all dependent upon a balanced solution.

The set is extremely easy to operate, the maker having in mind that the average user knows little or no chemistry. Directions are easily followed and the results as easily obtained. Readings obtained from the set are the results sought, there are no involved calculations required. All readings are in ounces per gallon of solution of the various ingredients. Directions also include means of altering solutions should they be out of balance.

The set, consists of a well made wall cabinet fitted with hardware to hold the necessary glassware during use and storage. The glassware is of finest make, some of it made especially for us. The solutions are in easily handled bottles, well labeled. The solutions can be used regardless of age, they need not be fresh to give accurate results. This insures correct results and economical operation at all times. The set in both sodium and potassium cyanide, and sodium and potassium carbonate. Directions, as mentioned above are very complete.

Richard Rimbach has been appointed Technical Advisor to R. C. Enos, President of Standard Steel Spring Company, Coraopolis, Pa.

Mr. Rimbach will work on the development and promotion of a new process for coating steel with a pore-free metallic coat which has successfully demonstrated its resistance to severe corrosion conditions in the Texas oil fields.

The new coating promises to expand the market for steel where corrosion now precludes its use. It will be especially advantageous in the manufacture of barrels, tanks, tubing, wire, etc., where corrosion resistance is essential.

Mr. Rimbach was formerly Director of Research, Standard Steel Car Co., Editor of METALS AND ALLOYS and more recently Consulting Metallurgical Engineer. He has written a number of articles for the technical press, translated several books and is Supervisor of the Department of Metallurgy's Extension and Evening Courses at the Carnegie Institute of Technology.

UNIFORM FINISHES
WITH SHORT, HIGH BAKES

● The new M & W Polydur Synthetic Enamels dry out of dust in a few minutes and give fine, uniform finishes, without discoloration, at short, high bakes.

15 Minutes at 325° F

in the baking oven are all that are needed to obtain excellent results with these "high speed" enamels.

The finish is durable, and is resistant to marring, moisture, heat, and ordinary household chemicals. Recoating can be done immediately if required, and surfaces can be easily retouched or patched.

Polydur Enamels are supplied in black, white, and all colors, for spraying or dipping.

AN M & W FINISHING ENGINEER WILL HELP YOU SOLVE YOUR FINISHING PROBLEMS

Maas and Waldstein Co. Newark, N. J.

Branch Offices and Warehouses . . . 1336 Washington Blvd., Chicago . . . 1238 W. Pico Blvd., Los Angeles

LACQUERS **PIONEERS IN PROTECTION** ENAMELS

HANSON-VAN WINKLE-MUNNING COMPANY ANNOUNCES ORGANIZATION CHANGES

Louis M. Hague was recently appointed Vice President in Charge of Sales of Hanson-Van Winkle-Munning Company, Matawan, N. J. C. W. Yerger, formerly Vice President and Sales Manager has been appointed Executive Vice President.

ELEVATOR TYPE, FULL AUTOMATIC PLATING CONVEYOR

A distinctly new type of full automatic plating conveyor has been perfected by the Hanson-Van Winkle-Munning Co., of Matawan, N. J. manufacturers of electroplating equipment and supplies. This machine called the Elevator Type Conveyor, is suitable for almost any of the wide variety of plating and coloring operations, including basket cleaning, bright dipping, acid pickling, liquid caustic dips, combination cleaning and burnishing in perforated cylinders, barrel plating and rinsing, paint dipping, lacquer dipping, bonderizing and all classes of electroplating.

The conveyor is of the dwell type, having carriers mounted in their own guides, moving freely up and down. The guides are permanently attached to chains, top and bottom, at fixed spacings. The carriers advance one station whenever the conveyor chain moves forward the distance of the carrier spacing. A counter-balanced elevator, slicing on the vertical guide tubes, moves up and down through a fixed distance, engaging the carriers at the transfer points. During the top position of the transfer the horizontal chain moves forward one carrier spacing before the elevator is lowered.

The outstanding advantages of this conveyor are its simplicity, low headroom and wide range of applications.

Regardless of the number of treatments in the cycle, there is only one lift — the elevator. In principle, it operates like any elevator having a counterbalance to offset the load of both elevator and lifted carriers. Light loads or heavy loads work equally well with any height of lift.

It is designed to operate by any of three methods:

1. With hydraulic cylinders to raise and lower the elevator — and a geared motor to drive the conveyor chain and advance the carriers from station to station. In some applications, a horizontal hydraulic cylinder will replace this motor drive.
2. With crank and connecting rods rotating through 360 degrees in raising and lowering the elevator. Part of the crank travel is utilized to operate a lever that moves the chain forward thus advancing the carriers from station to station.
3. With a gear driven chain and sprocket drive to raise and lower the elevator and a separate drive geared to the forward drive chain to move the carriers from one station to another. Both drives are synchronized.

In high speed plating solutions, the racked work may be kept in constant motion by oscillating back and forth, permitting use of high current densities. Treatment times may be varied and still maintain a fixed transfer time.

EGYPTIAN
ZINC CHROMATE PRIMER

- An excellent rust-inhibiting undercoat.
- Dries rapidly at room temperature to take lacquer, High Bake N-F-R, and varnish finishing coats.
- Can be used in multi-coat single bake systems, savings costs, time, and baking operations.
- For exterior or interior use.

These and many other advantages are to be derived from the use of Egyptian Zinc Chromate Primer. We will welcome an opportunity to tell you more about this new undercoat and to discuss with you how it will best suit your individual need.

THE EGYPTIAN LACQUER MFG. COMPANY
ROCKEFELLER CENTER, NEW YORK

NEW LOCATION FOR ALROSE CHEMICAL COMPANY

The manufacturing plant and laboratories of the Alrose Chemical Company and Mark Weisberg Laboratories have recently moved from their former Providence, Rhode Island locations, 80 Clifford street and 92 Printery street, to a new, enlarged factory at 180 Mill street, Cranston, Rhode Island. The new plant, off Park avenue, has 40,000 square feet of working space, with laboratories to accommodate 8 chemists.

The John P. Bonnett & Son Company, formerly owned by Mark Weisberg Laboratories, has been liquidated. Its operations in the electroplating of jewelry and novelties in precious metals have been discontinued in order that increased emphasis may be given by Mark Weisberg Laboratories to research and the development of new specialties for the metal and textile trades. Development of several new finishes is contemplated . . . also improvements in all methods of electroplating so that the demands for new styles and colors may be met more satisfactorily by manufacturing jewelers.

At the new plant, a full line of synthetic chemicals for the textile industry, wetting agents, etc., will be produced as in the past . . . also the production of plating solutions for jewelers will be continued and enlarged. Mr. Mark Weisberg and Mr. Frank K. Smith, well known to the trade, are devoting their full time to the servicing and sales of equipment and special chemicals.

Among the many well-known processes and plating solutions developed or produced by Alrose Chemical Co., and Mark Weisberg Laboratories are: Wetting Agents, Waterproofing Compounds, and Printing Gums; also *Jetal*, a simple immersion process which colors products of iron or steel to a lustrous, rich black finish. Not only is Jetal a decorative finish in itself, but it also serves as an effective rust-resistant and an excellent base for subsequent finishes such as paints, lacquers and enamels; *Rhodium*, a hard, brilliant, durable white plate, highly reflective and untarnishable; *White Gold No. 2*, a lustrous, white, acid-proof finish for precious and base metals . . . easy to control, inexpensive; *White-Brass*, a brilliant non-tarnishing white plate, long-wearing and low in cost . . . for all base and precious metals; *Bon White*, a silvery white, immersion finish for volume production of articles made of copper or brass or preplated with these metals; *Gold Smut Base*, a rich smut plated without the use of gold . . . provides an inexpensive base for all antique finishes.

The industry is invited to call on Alrose Chemical Co. for advice on plating and finishing problems . . . a service rendered free of charge. The new telephone numbers are William 3000 and 3001. A rapid delivery system is maintained for servicing the trade promptly and efficiently.

CHEMICALLY TREATED BUFFS

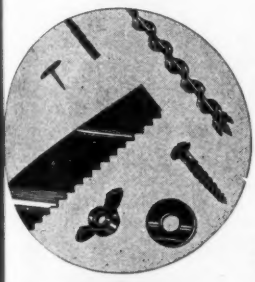
An interesting method of making buffs last longer and stand up better against abrasive wear is a chemical treatment perfected by the Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturers of electroplating equipment and supplies. These buffs are made of two types of square count cloth called Economy and Tractor. The buffing cloths, as they come from the loom, are passed through a chemical bath. The wear resistance developed by chemical treatment is further increased by the carefully balanced construction of the buffing textile. It is stated also that the treated buffs absorb polishing composition better, giving improved cutting and coloring action on the product being buffed.

The chemicals used for treating the buffs include a hygroscopic element whose purpose is to absorb moisture from the air, fixing it in the cloth and giving a conditioned sheeting at all times.

Threefold Superiority

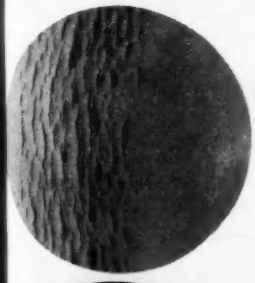
the JETAL process

(TRADEMARK REG.)



1. A Beautiful Finish

JETAL . . . simple . . . economical . . . enhances the appearance of products of iron or steel. Its lustrous, rich black finish does not alter dimensions or surface textures. JETAL is an oxide of iron and a part of the metal itself.



2. An Excellent Paint Base

JETAL is an excellent base for modern paints, lacquers and enamels. It retards rust formation . . also allows subsequent coatings to develop their true adherence to the metal. Cut shows impact test made on enamel over JETAL. Note that the enamel film is still firmly adherent to the steel . . is finally fractured only when the steel itself parts. In such impact tests JETAL and enamel showed 300% more adherence than enamel and steel and no breakdown after 2,000 hours in a humidity cabinet.

3. An Effective Rust-Resistant

JETALized iron or steel, dipped in our Jet-oil, stops corrosion attack for long periods of time — in laboratory tests showed no appreciable attack after 165 hours in salt spray.

The JETAL Process is known throughout the world for its effectiveness and economy. Ask for descriptive folder giving full details of the JETAL bath and its use.

ALROSE CHEMICAL CO.

Providence, R. I. *Tel. WIlliams 3000*

Also Distributed by HANSON-VAN WINKLE-MUNNING CO., MATAWAN, N.J

NEW HAVEN BRANCH CHEMISTRY CLASS BANQUET

The second annual Banquet of the Chemistry Class members of New Haven Branch was held on Saturday Evening, June 3rd, at the Hejoz Grotto Hall. There were about 70 in attendance. After a very fine chicken dinner and floor show, Professor Vance of Yale University was asked to speak, Dr. Vance in a few chosen words spoke of his very pleasant relations with members of the class during the time he was the instructor at Sterling Laboratory.

Vice President of the Supreme Society, Joe Downes who is also retiring President of New Haven Branch then called on the following, President Elect Henry J. Creamer. Henry urged the members to attend both the meetings and classes and promised a successful year ahead if the members continue their support.

Robert Gray, Secretary-Treasurer, Librarian Joseph Sullivan, Assistant Secretary, Clarence Garner all added a few remarks.

There being a good representation from Waterbury, the President, Mr. Ellsworth Candee was prevailed upon to address the group. Mr. Candee called attention to the remarkable increase in attendance at the Waterbury Branch meetings during the past year. Many speakers of prominence addressed their meetings which gave encouragement and created quite a little interest.

The last speaker was Tom Chamberlain through whose efforts the chemistry class was started. Mr. Chamberlain is deeply interested in the continuation of the classes, and hopes for an even larger attendance this fall when the Branch activities start again.

At the conclusion of the speeches, Chairman Downes called for a vote of thanks to all who had any part in the success of the banquet. Charlie Koebbl bowed in acknowledgment and thanked all present for their cooperation.

CONTINENTAL ENTERS NEW FIELDS

The Industrial Equipment Division of the Continental Roll & Steel Foundry Company, East Chicago, Ind., has announced the acquisition of the Howell Engineering Co., St. Charles, Ill., manufacturers of Automatic Polishing and Buffing Equipment made under the B. F. Bower patents and patents pending. The engineering, service and sales staffs have also been absorbed.

Complete production of these products, which will henceforth carry the name "Continental" will be at the company's East Chicago Plant; the Coraopolis, Pa., and Wheeling, W. Va., Plants concentrating on the company's products for the steel and other industries, and steel castings in general.

Automatic Polishing and Buffing Machinery includes automatic work holders and chucks for high production polishing and buffing of parts with polishing surfaces on several planes such as vessels and spherical, circular or symmetrical pieces, irregular pieces, small intricate parts and straight or tapered tubing. These machines feature foot pedal control, leaving the operator's hands free to pick up the next piece from the shelf, skid or tote box.

Other equipment in the line includes multiple chuck machines which permit removal and replacement of finished work while other work is being polished; reciprocating tables for polishing flat, capped or headed objects; and multihead continuous tubing, molding and strip polishing machines with automatic composition applicators.

While there are many standard machines in the line which will meet the needs of numerous manufacturers, special machines involving the Bower principles will be developed to meet unusual requirements.

Mr. H. W. Faint, who is well known in the industry, having long been associated with metal polishing and buffing equipment, will head up the sales department of this unit of Continental Industrial Equipment Division.

Are You Using ALUNDUM ABRASIVE?

YOU'LL like its fast cutting action and the way it stays on the set-up wheel until its job is done. Special Norton manufacturing methods assure uniform shape and uniform size — no oversize grains to cause scratches. Special surface treatments give it extra "sticking power" — enable the glue or cement to grip firmly. Use Alundum Abrasive for your polishing wheels.

NORTON COMPANY, WORCESTER, MASS.

G-90

NORTON ABRASIVES

REPORT OF EXECUTIVE SECRETARY
From June 1, 1938 to April 30, 1939

These reports will give the membership full information regarding our finances and branch statistics for the fiscal year.

W. J. R. KENNEDY, *Executive Secretary*

ANNUAL STATEMENT
AMERICAN ELECTROPLATERS' SOCIETY
Year Ending April 30, 1939

RECEIPTS:

Sale of Advertising		$ 6562.76
Sale of REVIEWS		152.07
Sale of Proceedings		200.00
Per Capita Tax		4213.96
Sale of Buttons		28.00
Sale of Branch Supplies		385.80
Harshaw Chemical Co., member Cleveland Branch		6.00
Int. Nickel cuts for REVIEW		37.59
Gift from Milwaukee Convention		500.00
Int. Nickel, Reprints Dr. Wesley's Article		44.50
W. J. R. Kennedy, Refund Travelling		20.00
Refund Travelling, Loaned Mr. Strausser at Detroit		20.00
Roberto Piontelli, Member Springfield Branch		10.00
Int. Nickel, Reprints Dr. Wesley's Article		115.00
G. B. Hogaboom, Refund Trip to Coast		4.33
Seymour Mfg. Co., Reprints O. E. Stocker's Article		35.00
Miscellaneous		29.51
Total Receipts		$12364.52

Balance May 31, 1938	$ 5685.57	
Total Receipts for 11 Months Ending April 30, 1939	12364.52	
	$18050.09	
Disbursements for Year	11925.83	
	6124.26	
Outstanding Check # 369	93.00	
BALANCE APRIL 30, 1939		
Third National Bank Springfield, Massachusetts		6217.26

DISBURSEMENTS:

Executive Secretary's Salary		$2374.00
Executive Secretary's Travelling		870.00
Executive Secretary's Office		178.63
Collector Internal Revenue		52.00
R. M. Goodsell, Office		29.25
R. M. Goodsell, Travelling		64.96
F. Fulforth, Office		63.28
F. Fulforth, Travelling		9.96
J. E. Downes, Office		8.74
J. E. Downes, Travelling		22.80
E. S. Thompson, Travelling		21.00
A. Fletcher, Office		2.50
A. Fletcher, Travelling		59.00
F. J. MacStoker, Office		3.16
F. J. MacStoker, Travelling		57.90
Printing and Mailing REVIEWS		$ 4498.62
Outstanding May Check # 239 } 1938		100.00
Outstanding May Check # 240 } 1938		23.03
L. E. Meacham Bond Executive Secretary		25.00
H. S. Sanderson, Auditing		10.00

McALEER BUFFING COMPOSITIONS
Are Made at "Buffing Headquarters!"

When you specify "buffing compositions by McAleer" you know that you are using the best product which the market affords for its specific use.

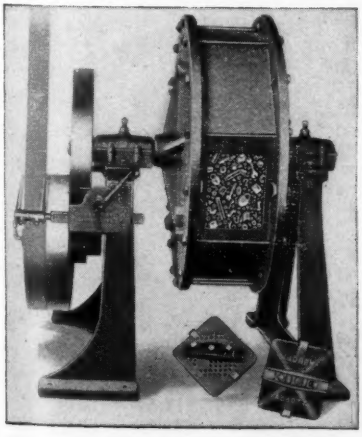
McAleer is not only a pioneer in the metal polishing field, but is also a leader in the development of advanced polishing technique and materials.

A big, new, modern plant providing manufacturing equipment of the most advanced design enables McAleer to furnish a product of even greater uniformity than ever before. There is a McAleer product for every buffing or polishing requirement.

McALEER MANUFACTURING COMPANY

Detroit, Michigan — Walkerville, Ont.

Why Abbott Barrels are Better



Ball burnishing depends on pressure for its efficiency. Abbott barrels confine the load within a narrow area . . . . bring maximum pressure to bear directly on parts being finished.

Such concentrated pressure is lacking in horizontal barrels in which the weight of the burnishing balls is scattered over a wide area.

Abbott barrels are the logical choice of companies demanding the most efficient equipment. There's a size to fit your production. Write for complete information. The Abbott Ball Company, 1051 New Britain Avenue, Hartford, Connecticut.

"better barrels—better burnishing"

Jean Thompson, Extra Gold Medal	11.00
F. Marquardt, Reporting Convention Proceedings	257.30
J. E. Stewart, (Cuts)	31.50
J. E. Stewart, Envelopes, Letterheads, and Bill Heads	57.89
Exchange of Canadian Checks	2.63
F. Marquardt, Printing Proceedings	1959.50
Springfield Branch Dues, Prof. Piontelli	10.00
W. C. Ross, Copyrighting Proceedings	10.00
Jack's Letter Service, Mailing Proceedings	43.00
Post Office Deposits	60.00
J. E. Stewart, Zinc Halftones	63.09
J. E. Stewart, 5000 Application Blanks	33.00
Dygert Printing Co., Branch Supplies	26.25
Cleveland Branch Membership, Harshaw Chemical Co.	6.00
J. E. Stewart, Reprints Dr. Wesley's Article	158.00
J. E. Stewart, 3000 Copies, Constitution	98.50
Metal Arts (Buttons)	88.10
J. Gilbert Craig, (Error in Deposit, Check Returned)	28.19
G. B. Hogaboom, Trip to Coast	350.00
Newark Branch, Advertising Convention	93.00
J. E. Stewart, Reprints O. E. Stocker Article	32.00
District Agency Ins.	5.05
J. E. Stewart, Printing Branch Supplies	28.00
	$11925.83

AMERICAN ELECTROPLATERS' SOCIETY
RECEIPTS FROM PER CAPITA TAX AND BRANCH SUPPLIES
June 1, 1938, to April 30, 1939

BRANCH	Per Capita Tax	Supplies	Pd. May Supplies and Per Capita Tax	Bal Due
Anderson	77.41	9.50		
Baltimore-Washington	126.00	12.75		
Binghamton-Syracuse	43.20		19.40	
Boston	213.09	21.50		
Bridgeport	131.62	15.25		
Buffalo	61.43		37.05	
Chicago	504.23	40.00		
Cincinnati	45.69	7.00		
Cleveland	125.32	12.75		
Dayton	127.13	20.05		
Detroit	407.10	52.00		
Grand Rapids	91.80	10.25		
Hartford	99.67	12.75		
Los Angeles	118.05	12.75		
Milwaukee	196.91	22.50		
Montreal	32.94		15.54	
New York	184.96		63.64	
New Haven	242.11	20.00		
Newark	234.23	25.50		
Philadelphia	228.15		78.00	
Pittsburgh	70.20	9.50		
Providence	82.14	9.50		
Rochester	158.40	16.00		
San Francisco	40.26		13.95	17.57 — 1939 34.06 — Due 1938
Springfield	98.33	10.25		
St. Louis	119.71	11.00		
Toledo	83.49	11.00		
Toronto	139.94	10.50		
Waterbury	130.45	13.50		
	4213.96	385.80	227.58	51.63

HY HARSHAW ANODES AND CHEMICALS EPOSIT BETTER PLATES!

Harshaw produces anodes and chemicals to exact formulae developed from continuous search for better quality.

Over a hundred technical workers and extensive modern control methods, guard the quality of every pound of finished material . . . . To the user, this means pure, uniform products and dependable performance in plating tanks.

THE HARSHAW CHEMICAL CO.

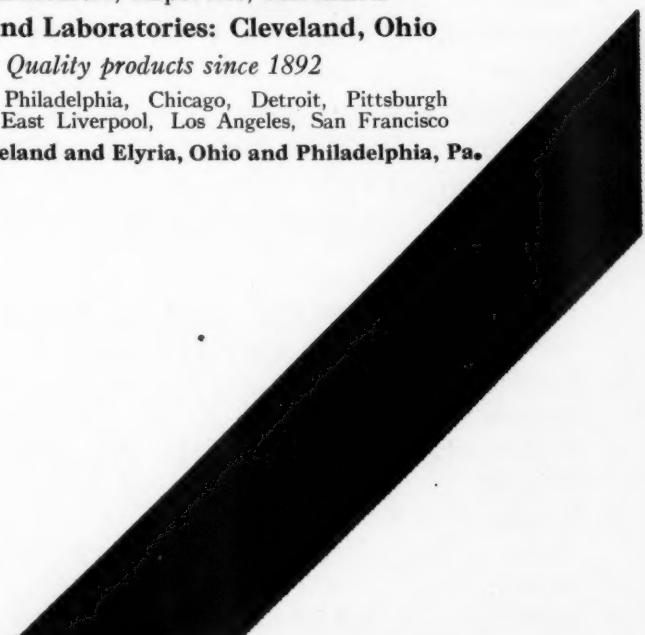
Manufacturers, Importers, Merchants

Offices and Laboratories: Cleveland, Ohio

Quality products since 1892

New York, Philadelphia, Chicago, Detroit, Pittsburgh
Cincinnati, East Liverpool, Los Angeles, San Francisco

Works at Cleveland and Elyria, Ohio and Philadelphia, Pa.



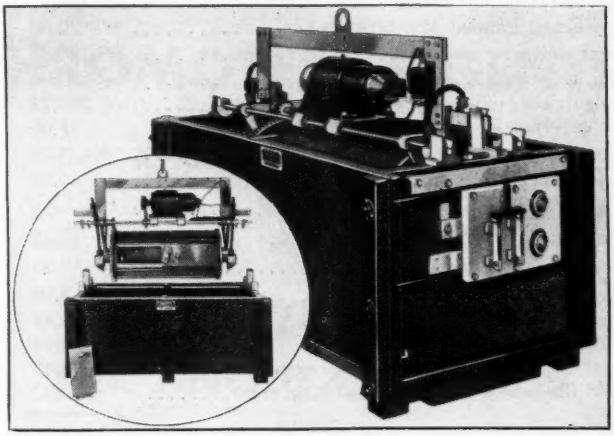
Please mention THE MONTHLY REVIEW *when writing*

AMERICAN ELECTROPLATERS' SOCIETY
REPORT OF MEMBERSHIP TURNOVER
For the Year Ending April 30, 1939

BRANCH	Membership May 31, 1938	Elected	Reinstated	Gained by Transfer	Loss by Transfer	Suspended	Resigned	Died	Membership April 30, 1939	Net Gain	Net Loss
Anderson	34	2		1		6	4		27	0	7
Balto-Washington	51	1		1	1	11		1	40	0	11
Binghamton-Syracuse	22	2				2			22	0	0
Boston	90	6			1	14	1		80	0	10
Bridgeport	52	9		1	1				61	9	0
Buffalo	24	20		1				1	44	20	0
Chicago	189	25	1	1		1	2		213	24	0
Cincinnati	17	5							22	5	0
Cleveland	44	24					1		67	23	0
Dayton	47	9							56	9	0
Detroit	134	104	5	4	1	7	3	1	235	101	0
Grand Rapids	26	19	1			1	1		44	18	0
Hartford	40	3			2				41	1	0
Los Angeles	47	10			1	1			55	8	0
Milwaukee	80	9					2	2	85	5	0
Montreal	15	4							19	4	0
Newark	90	19	5		1	3	5		106	16	0
New Haven	89	22			2	1			108	19	0
New York	97	7	2	1		7	3		97	0	0
Philadelphia	109	27	4	1	1	5	2		133	24	0
Pittsburgh	27	5	1				1		32	5	0
Providence	34		1		1			1	33	0	1
Rochester	62	3				2			63	1	0
San Francisco	24	7							31	7	0
Springfield	36	7		1					44	8	0
St. Louis	37	26						1	62	25	0
Toledo	33	3				2			34	1	0
Toronto	54	9	1		1	4			59	5	0
Waterbury	52	3		1		1	1		54	2	0
	1656	390	21	13	13	68	26	7	1967	340	29

10 Honorary Members

MODERN
HARD RUBBER CYLINDERS
WITH MOTOR ATTACHED



RINSES READILY AND PERMITS CLEANING — RINSING — PICKLING AND PLATING IN ONE CYLINDER FOR SUPERIOR FINISH

CAN BE USED IN ANY SOLUTION 155° F OR COLDER

THIS IS PROGRESS!

LASALCO INC.
2822 LASALLE STREET
ST. LOUIS, MISSOURI

Please mention THE MONTHLY REVIEW *when writing*

RESEARCH

Balance June 1, 1938		$3327.52
Receipts 1938-1939		2686.36
		$6013.88
DISBURSEMENTS:		
P. W. C. Strausser, salary	$3264.00	
P. W. C. Strausser, travelling	144.05	
A. E. S. Refund Loaned Mr. Strausser	20.00	
P. W. Huff, salary	185.25	
Dr. Blum, travelling	400.00	
G. B. Hogaboom, office and travelling expenses	298.25	
Collector Internal Revenue	78.00	
Bert Sage, postage and typing	6.50	
Marion Juke, typing	10.00	
Bank Exchanges	.90	
Industrial Filter and Pump	77.25	
A. E. S. (error in deposit)	50.00	
W. J. R. Kennedy, stamps	3.00	
J. E. Stewart, printing	46.89	
District Agency Insurance	33.04	
Am. Society Testing Materials, membership	30.00	
Springfield Branch (2 checks deposited in error)	18.00	
		4665.13
		1348.75
Outstanding Check No. 143		18.00
Bank Balance April 30, 1939		$1366.75

Union Trust Company, Springfield, Mass.

Receipts from June 1, 1939 to April 30, 1939

The Meaker Company	$ 100.00
National Cash Register	100.00
Millers Falls Company	9.00
Crane and Company	25.00
International Nickel	250.00
Evans Case Company	10.00
Blake Mfg. Company	10.00
General Electric Company	50.00
Standard Sanitary Company	100.00
Noblitt Sparks, Inc.	20.00
New Haven Branch	25.00
Newark Branch	25.00
American Hardware	25.00
Ritter Dental Mfg. Co.	25.00
Grand Rapids Metalcraft	25.00
Metal Industry Company	25.00
Oneida, Ltd.	50.00
Mercil Plating Equipment	50.00
Norton Company	50.00
Lasalco, Inc.	15.00

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Please mention THE MONTHLY REVIEW *when writing*

Underwood Elliott Fisher	10.00
Chrysler Corp.	100.00
Eastman Kodak Co.	25.00
Ames Plating Co.	4.50
Millers Falls Co.	9.00
Fred Gumm Chemical Co.	25.00
Bridgeport Metal Goods	25.00
Proceeds from raffle (Milwaukee Convention)	101.00
F. B. Stevens Company	75.00
Taylor Instrument Company	50.00
Cincinnati Branch	25.00
Bridgeport Branch	25.00
Philadelphia Quartz	25.00
Westinghouse Company	100.00
United Chrome Company	50.00
The Washburn Company	15.00
General Motors	150.00
A. C. Campbell Company	10.00
Metropolitan Motors, Ltd.	50.00
The Bullard Company	10.00
A. T. Wagner Company	25.00
Eaton Mfg. Co.	25.00
Wald Mfg. Company	15.00
The Lionell Corp.	25.00
*Error in deposit, E. I. duPont Company	50.00
The Kohler Company	25.00
Fifth dividend on closed Union Trust Company of Dayton	121.03
Sharon Steel Corp.	25.00
Final dividend on closed Dayton bank	96.83
The Lobdell-Emery Company	20.00
Douglas & Loamson	25.00
American Hardware Corp.	25.00
The Bastian-Blessing Co.	25.00
Scovill Mfg. Company	25.00
Apollo Metal Works	25.00
The Weatherhead Company	10.00
G. & O. Mfg. Company	5.00
Chromite Company	10.00
McGill Mfg. Company	25.00
Matthews Company	25.00
Firestone Steel Products Co.	25.00
Presto Lock Corp.	25.00
Kocour Company	25.00
Crowe Nameplate Company	50.00
J. B. Wise, Inc.	10.00
National Plating Co., Milwaukee	25.00
Appleton Elec. Company	25.00
TOTAL RECEIPTS	$2686.36